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Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus

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CHALLENGING THE NORM OF MINIMUMS: A CASE STUDY OF ADA DESIGN STANDARDS ON THE UNIVERSITY OF NEBRASKA-LINCOLN CAMPUS

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CHALLENGING THE NORM OF MINIMUMS: A CASE STUDY OF ADA DESIGN STANDARDS ON THE UNIVERSITY OF NEBRASKA-LINCOLN CAMPUS

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In the United States, over 30 million people have difficulties climbing stairs and require the use of a walker, cane, or wheelchair to move around (United States Census Bureau, 2012). All people interact with the built environment around them, including the some thirty million who deal with physical difficulties. While some can navigate the space around them easily, others have more difficulty due to certain barriers. Often, interior environments are designed with the able bodied in mind, not accommodating properly for the disabled even in the most basic of ways. Despite the introduction of the Americans with Disabilities Act (ADA) in 1990 and the subsequent accessibility standards that accompanied it, there is still a disconnect between the application of ADA compliance of a building and true accessibility (Department of Justice, 2010). Although many buildings legally comply, the common norm of meeting the minimum requirements of accessible design standards leaves many people unable to use certain spaces and unable to participate fully in many activities that their able-bodied peers can.

This thesis examines buildings on the University of Nebraska-Lincoln campus and their accessibility applications. In a case study of ten buildings across the campus, an accessibility audit provides a measurement tool for the primary investigator and several research participants to measure quantitative and qualitative elements of accessibility. This audit asks the participants to measure elements of the built environment and compare them to the minimum ADA

standards. The objective of this research is to identify how often minimums are just met or exceeded in the built environment to provide commentary on the current state of accessible design and the ethics surrounding it.

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Introduction

There is a need for change in the way ADA Standards for Accessible Design are interpreted and applied across the nation. As they are treated now, the minimum standards barely scrape the surface of accessibility and fail to provide truly equal access to people with disabilities. While the standards have been in place for nearly thirty years, many buildings still fail to comply to even the minimum standards due to legislative loop holes and inconsistent enforcement. Discord among professionals in the design community fuels this fire, as the standards are viewed as both a hindrance to good design and as an excuse to avoid the responsibility of innovative design. An ethical dilemma and potential general unawareness of accessibility exists from these conditions, yet not much is done to remedy the predicament these minimum standards put those with disabilities in. A norm of minimums seems to have overtaken the posture and general approach of designers when considering the needs and experiences of accessible design.

This project seeks to determine whether buildings on the University of Nebraska-Lincoln campus generally adhere to the minimums of the ADA standards for accessible design (also referred to as the ADA design standards) or if they exceed the minimum. By assessing a compliance audit comprised of compliance questions formulated by the primary investigator as well as questions from the ADA Readily Achievable Barrier Removal Checklist for Existing Facilities (Appendix A), data is collected to document instances in which the building adhered to the guidelines or went beyond. Specific areas examined include entrances/exits, accessibility to spaces within, restrooms, and stairs/elevators. These quantitative results, in combination with qualitative analysis, will provide a picture of the issue at hand; this issue encompasses the overall approach and consideration of accessibility and the minimum standards in the design of the built

environment by various stakeholders. The primary investigator hypothesizes that the majority of assessed features in each building will not exceed the minimum requirements, as it is a norm among designers, contractors, and those responsible for maintaining the built environment to treat minimums as a number to be met and not improved upon.

1. Literature Review

1.1 History of Disability

Accessible design is something that seems relatively new in terms of legislation and common knowledge, though the issue surrounding it has been around since the beginning of time. For years, those with both physical and mental disabilities were treated with little to no respect and were treated almost as inhuman. Archaeologists have documented evidence of people with disabilities dating back as far as the Neanderthal Period (Mackelprang & Salsgiver, 1996); a period of time in which those with disabilities were viewed to be possessed by demons. Various cultural and religious beliefs have guided society's interactions with the disabled for centuries, ranging from terrible to worse. Spartans abandoned their disabled to die, while the disabled were ostracized during the middle ages, thought to be "expressions of God's displeasure" (Mackelprang & Salsgiver, 1996).

Around the time of the enlightenment in the 17th century, beliefs surrounding those with disabilities changed from ostracization to attempts at "perfecting" or curing them of their disabilities. This quickly transformed back to a perception of worthlessness in the wave of Eugenics and Darwinism, as those with disabilities were viewed as the weak whose genetics should be eradicated from society (Ontario Ministry of Community and Social Services, 2012).

At the turn of the 20th century, parents of children with disabilities were encouraged to hide their kids or institutionalize them, no matter the type or severity of disability. It wasn't until the 1960s that "the birth of disability consciousness in the United States arose" (Mackelprang & Salsgiver, 1996). The Civil Rights Movement, in conjunction with unrest surrounding events like the Vietnam War, encouraged those who had been thrown to the shadows to come forth and fight for their rights.

1.2 History of Accessibility Legislation

Just four years after the passage of The Civil Rights Act, the first legislation to address physical barriers to those with disabilities was passed. The Architectural Barriers Act (ABA) of 1968 was signed into law by President Lyndon Johnson, who characterized the issue as a part of the government "that perpetuated cruel discrimination" (United States Access Board, 2018). This act mandated that construction of federally funded buildings be accessible in nature. Exceptions included private residences and "any building or facility on a military installation designed and constructed primarily for use by able bodied military personnel" (United States Access Board, 2018). A primary motivation behind this legislation and the discussion around physical barriers came from Vietnam Veterans. Due to advances in medicine since the last war, more and more Veterans came home alive, but with extreme disabilities such as limb loss, paralysis, post-traumatic stress (which was not a diagnosed condition at the time), and many other injuries that would classify them as disabled (Clarke, Gregory, & Salomon, 2015).

Despite the overall poor treatment of Vietnam Veterans upon their return home from a war in which many unwillingly participated, the government addressed a new need for modified facilities to accommodate these Veterans. Many of the new accessible standards integrated into the ABA resulted directly from the type of disabilities that Vietnam Veterans faced. An example of such a modification is the addition of grab bars in restrooms. This intervention was introduced to assist Vietnam Veterans in independently toileting, as many were wheelchair-bound with their upper body strength intact (Hamilton & Watkins, 2009). While this is a great intervention for those who had use of their arms and could support their entire body weight with their arms, this intervention is not helpful for many other types of disabilities; and yet it is still one of the most widely used and added accessible elements in today's accessible building modifications.

In the past, each type of disability was classified differently, segregating the disabled as individuals and not as one community. In 1973, the passage of the Rehabilitation Act ushered in a societal change that classified those with disabilities as an entire cohort; a change that would prove helpful for civil rights but eventually detrimental for accessible building standards.

Specifically, within the Rehabilitation Act of 1973, Section 504 included language to ban "discrimination on the basis of disability by recipients of federal funds" (Mayerson, 1992). This language recognized that while various disabilities, both physical and mental, require differing accommodations, "people with disabilities as a group faced similar discrimination in employment, education, and access to society" (Mayerson, 1992). This also characterized the group as a minority in America, which allowed activists to push for legislation to outlaw disability discrimination.

The question that arose with discrimination against those with disabilities, however, was what actually constituted discrimination? Though similar in some ways to rights outlined by the Civil Rights Act, public accommodations for those with disabilities could be much different, since literal access to a building or facility could be denied due to certain disabilities. Only in the previous decade had the United States considered what accessibility meant to all people, so language surrounding physical barriers and equal access was quite vague and not heavily regulated.

Along with the Rehabilitation Act of 1973, the year brought another resource for disability rights activists. The United States Access Board was formed in 1973 for the purpose of defending the rights of those with disabilities. Originally called the Architectural and Transportation Barriers Compliance Board, this Board "is an independent federal agency that promotes equality for people with disabilities through leadership in accessible design and the

development of accessibility guidelines and standards" (United States Access Board, 2018). The creation of this board was in direct response to the observation that compliance of the ABA of 1968 was uneven and hastily enforced. The Board's initial charge was to enforce regulation of the ABA among government agencies as well as work to develop additional accessibility guidelines.

Upon discussion of implementing such a Board, a Senate Committee report stated that: "barrier-free design in federal buildings and federally assisted projects is mandated in present law but has never been adequately enforced. ... The Committee believes this Board can serve to accomplish this" (United States Access Board Archives, 2018). Addressed as an issue back in 1971, adequate enforcement remains an issue today.

The first Executive Director of the United States Access Board was James S. Jeffers, appointed in 1975 to recruit additional staff and begin the work of the Board. Among the first projects was a partnership with the National Parks Service to improve accessibility to national parks in preparation for the bicentennial (United States Access Board Archives, 2018).

Throughout the latter part of the 1970s and 1980s, disability rights proponents and government agencies like the Department of Health, Education and Welfare (split into the Department of Education and the Department of Health and Human Services in 1979) met to discuss the rights of those with disabilities and the totality of the legislation that should be introduced to combat this discrimination. The process was long and grueling, including record breaking sit-ins lasting for as long as 28 days to push for equal rights.

In 1978, amendments to the Rehabilitation Act charged the United States Access Board to establish minimum accessibility guidelines. It appears as though this is the first instance in which the term "minimum" was associated with accessibility legislation. In addition to this

charge, President Jimmy Carter also increased the diversity of the Access Board to include members of the public, including those with disabilities (United States Access Board Archives, 2018).

With many steps forward in the 1970s, a new administration sought to take several steps back in the 1980s. Disability rights proponents had to defend Section 504 of the Rehabilitation Act, as President Reagan deemed it a regulation that was "burdensome on businesses" (Mayerson, 1992). After successfully defending Section 504, efforts continued in a positive direction, including the implementation of the Access Board's minimum guidelines for accessible design in 1982 and amendments to the Fair Housing Act in 1988. The new minimum guidelines were called the Uniform Federal Accessibility Standards (UFAS) and they were adopted by the Department of Housing and Urban Development, Department of Defense, the General Services Administration, and the U.S. Postal Service in 1984. Updates to the Fair Housing Act primarily added language to prevent disability discrimination in housing. This strong momentum of disability activism was recognized by government officials in 1989 when the Americans with Disabilities Act was introduced.

The Americans with Disabilities Act, or ADA, was passed as law in 1990. Within the House of Representatives, the bill was presented by Representative Anthony Coelho (D. CA) as bill H.R. 2273 on May 9, 1989 (Civic Impulse, LLC, 2018). After passing the House on May 22, 1990, the companion bill emerged in the Senate. Presented by Senator Tom Harkin (D. IA) and the Senate Labor and Human Resources Committee in 1989, S.933 became Public Law No. 101-596 on July 26th, 1990 (Library of Congress, 2018). This bill was an extremely comprehensive piece of legislature that encompasses the rights of those with disabilities in all facets of life,

including employment, education, civil rights, services and programs, and public building accommodations.

The specific legislation regarding the built environment is discussed in Titles II and III of the original legislation. Title II prohibits discrimination "on the basis of disability in all services, programs, and activities provided to the public by State and local governments" (Department of Justice, 2010). Title III "prohibits discrimination on the basis of disability in the activities of places of public accommodations (businesses that are generally open to the public…such as restaurants, movie theaters, schools, day care facilities, recreation facilities, and doctors' offices)…" (Department of Justice, 2010). Within these two titles, the Department of Justice (2010) requires that the facilities discussed be compliant with the accessibility standards as outlined in the legislation or that they be altered to comply.

Just one year after signing ADA into law, the United States Access board introduced the first version of accessible design standards to ensure that the built environment would not discriminate against people with disabilities. This version was called the ADA Standards for Accessible Design of 1991. It is also referred to as the ADA Accessibility Guidelines or ADAAG by the United States Access Board (Department of Justice, 2018). These standards/guidelines took effect on July 26, 1991 and expired on March 14, 2011. The United States Access Board was responsible for both writing and implementing these standards, a duty that would only expand over time.

In 2004, the United States Access Board updated the 1991 ADAAG along with the ABA to provide a consistent level of compliance across both acts. This update involved far more stakeholders than previously, as those with disabilities, design professionals, building codes organizations and others consulted in re-working the document (United States Access Board

Archives, 2018). The Access Board also took more than 2,500 public comments into consideration. This update was a hallmark of harmony with the International Building Code that had not been achieved before. This harmony would allow for codes and standards to work side by side instead of conflicting one another.

Updates and revisions to Titles II and III included “enforceable accessibility standards called the 2010 ADA Standards for Accessible Design” (Department of Justice, 2010). These standards give a comprehensive list of specific building and construction requirements that expanded on previous versions and must be met for a building to comply with the ADA of 1990. In neglecting these standards, buildings would be determined discriminatory against those with disabilities. Within the legislation, all construction after March 5, 2012 must be completely compliant to the new standards.

Since implementation of the 2010 ADA Standards for Accessible Design, work still continues to improve upon the legislation. The United States Access Board continues to develop training documents for municipalities to use as a guide in implementing the standards and they have developed tools such as the ADA Checklist for Readily Achievable Barrier Removal (Appendix A). The United States Access Board does not have information as to when they will publish an updated version in the future, as the 2010 standards just recently took effect.

1.3 History of Universal Design

Along with understanding the history of legislation surrounding accessibility, it is also vital to understand a movement that has shaped the discussion surrounding accessibility and equal access for about the last fifty years. This movement is called Universal Design. “Universal Design is the design and composition of an environment so that it can be accessed, understood

and used to the greatest extent possible by all people regardless of their age, size, ability or disability" (National Disability Authority, 2014).

Universal Design began as a movement alongside early accessible design efforts in the 1950s. The act of removing architectural barriers and modifying the existing built environment was a natural start to both movements, though Universal Design began to diverge in the 1970s with the ideology from architect Michael Bednar that objects and environments should be designed from the beginning to be accessible; an ideology that would go beyond accessibility (Institute for Human Centered Design, 2016). Up until this point, all accessibility progress was reactive and in response to specific disabilities, primarily those in wheelchairs.

Alongside the rise of the disability community's activism in the 1980s, issues with the first round of accessibility legislation arose. This community was disappointed by the 1982 Uniform Federal Accessibility Standards, stating that "the unintended consequence [was] that laws governing accessible design had reduced design to a set of minimum requirements too often resulting in designs that were accessible but felt separate and unequal" (Institute for Human Centered Design, 2016). Allowing access was a step forward but limiting equality diminished the progress. Designers also felt restricted by the language of the legislation, which dampened creative potential. The earliest proponents for Universal Design understood that they must anticipate the diversity of users from the beginning of the design if they wanted to combat the issues at hand.

Though most history covered in this paper is contained to the United States, accessibility was and still is an issue around the world. Several designers in Ireland were directly responsible for a very important milestone that would shape the interpretation of Universal Design within the United States and globally. These designers pushed for a resolution at the World Design

Congress in 1987 that urged designers everywhere to consider aging and disability in all work they do (Iezzoni & O'Day, 2006). The discussion surrounding disability was changing, as many realized that at some point in their lives, they would be, to some extent, disabled. Whether it happened to them in old age, from disease, injury, or any other reason, almost all people globally would experience some kind of disability at some point. This realization assisted the disability rights community in starting to diminish the “us” versus “them” mentality that previously held in society. Unfortunately, this mentality still exists to an extent even today.

American architect and survivor of Polio Ron Mace coined the term Universal Design, though he was very aware of the shortfalls of the name. Universal typically describes something that covers all possibilities, and while this is the intent of the movement, Mace recognized that no design would ever be able to include every single possible user (Institute for Human Centered Design, 2016). Nonetheless, he challenged designers to strive for that level of inclusivity. Universal Design is defined by not specifying to an individual user, as is sometimes the case within the legislation of the ADA Standards for Accessible Design.

In the 1990s, the movement continued to gain momentum, particularly among industrial designers. Industrial designers were not limited to the same standards and codes that architects and interior designers faced, so they had more creative freedom to explore universally designed products. After all, industrial designers focus very heavily on the experience of the end user. The example started by industrial designers inspired architects and interior designers to go beyond the standards and push the boundaries to allow equality in design.

In 1997, ten designers worked together to compile a list of principles for Universal Design. These principles, though slightly modified throughout the world, are copyrighted to the

Center for Universal Design at the State University of North Carolina at Raleigh; a hub for Universal Design that still leads the nation today. The principles are:

1. **Equitable Use:** The design does not disadvantage or stigmatize any group of users.
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
3. **Simple, Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. **Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6. **Low Physical Effort:** The design can be used efficiently and comfortably, and with a minimum of fatigue.
7. **Size and Space for Approach & Use:** Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility (Institute for Human Centered Design, 2016).

These principles allow designers to look at Universal Design from a variety of vantage points and remind them of the objectives set forth to create a built environment that is usable by the widest range of users possible.

Universal Design still continues to be a strong movement today, with many Universities incorporating the topic into coursework for accredited Interior Design and Architecture programs. Many Universities have also adopted policies regarding Universal Design, including the University of Nebraska-Lincoln (UNL). UNL’s Facilities Planning and Construction

Department published a document on accessibility and Universal design in July of 2017 to outline University policy on Universal Design and the standards to which the University strives to meet.

ACCESSIBILITY, UNIVERSAL DESIGN

Accessibility Code: All remodeling and new construction on the University of Nebraska-Lincoln campus shall conform to the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and Title 156 – Nebraska Accessibility Requirements of the Nebraska Administrative Code (NAC).

Universal Design: The standards given in the Nebraska Accessibility Requirements of the Nebraska Administrative Code (NAC).and *ADAAG* are to be recognized as being minimal standards required by law for designing facilities that are readily usable by persons with disabilities. The University of Nebraska-Lincoln strives to provide facilities that are universally usable by persons with diverse physiologic and sensory abilities. The design of campus facilities shall provide for full and independent use of the facility by persons with disabilities.

Figure 1: Screen capture from Facilities Planning and Construction Document of Accessibility, July 2017. Retrieved from: https://facilities.unl.edu/design-guidelines.

With a charge to design facilities readily usable by persons with disabilities, the University strives to improve upon the minimum requirements provided by the listed entities. As this document came out quite recently, it is unclear if Universal Design principles will be present among the buildings studied in this paper.

1.4 Analysis of Problem at Hand

As alluded to in the discussion of Universal Design, many issues remain even today regarding the repercussions of accessibility legislation. While the legislation asserts that those with disabilities have equal rights in all facets of life, including access to the built environment, the nature of minimum requirements in the legislation fails to provide equal access. By definition, a minimum is the least quantity admissible, assignable, or possible (Merriam Webster, 2018). The nature of minimums is something that is studied across disciplines and it is a societal norm that when presented with a minimum, people often treat it as the maximum they have to

achieve. It is unfortunate that the least quantity is something that many strive to just meet and due to a lack of consequences otherwise, few feel the need to go beyond the minimum.

It is also common among society to treat regulations to the opposite effect that they were intended. As outlined in the article titled *Doing the Bare Minimum: Compliance vs. Safety*, people interpret things in whatever way suits them best, like treating a speed limit as the minimum speed of travel and safety regulations minimums as the maximum threshold (Simplified Safety, 2018). When these societal norms infringe upon the intended purpose of such regulations, dangerous outcomes arise. People crash cars from speeding and minimum safety regulations can still lead to injury or death, even when in compliance.

The purpose of minimum compliance is to set the least amount someone can do to be satisfactory with the intention that they will go beyond for the sake of the parties affected (United States Access Board, 2018). Whether it is increasing fall protection for construction workers to better insure their safety or allowing more than the minimum wheelchair turning space in a restroom for better ease of use, going above the minimums is necessary to treat people with dignity, safety, and equality. It is unfortunate to see this societal trend of minimums become a norm across disciplines.

In a separate study of accessibility issues, the primary investigator taped the minimum required wheelchair turning radius, as outlined in the ADA standards, out on the floor and asked that passersby of the final poster presentation attempt to turn around in the provided wheelchair without leaving the circle (Drummy, 2016). Not a single participant was able to successfully maneuver the chair around, creating frustration and a glimpse of understanding into the limits of minimum standards.

This norm of minimums creates an ethical dilemma within the design profession in which the quality of human life and experience is overlooked for extraneous factors such as cost or ease of construction. We are charged as licensed professionals to ensure the health, safety, and welfare of all people, and this cannot be done by only adhering to minimums of standards. According to the Council for Interior Design Qualification, interior designers must enhance the quality of life and culture of the occupants of the environments they design (National Council for Interior Design Qualification, Inc., 2004). The American Institute of Architects (AIA) has a similar professional charge, focusing heavily on ethics as a main driver of the work they do (DuBois, 2016).

Despite great strides to increase the accessibility of the built environment by professional organizations, the standards do not provide enough accommodations to those with disabilities and still leave room for discrimination. By definition, ADA seeks to provide equal access for all people to services and programs within public spaces. The very first section of the standards states:

> Each facility or part of a facility constructed by, on behalf of, or for the use of a public entity shall be designed and constructed in such a manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities, if the construction was commenced after January 26, 1992 (Department of Justice, 2010).

The language of the document in this first section can also hinder the problem, as vague exceptions exist for when a building does not need to comply. While it is understandable that not every building will be able to comply to the standards without time and money invested into the facility, it is still disappointing how open to interpretation these phrases leave the standards. The section of "Disproportionality," while it does provide an equation to determine feasibility, still

suggests that alterations needed to make a path of travel accessible may be deemed disproportionate if the cost exceeds 20% of the overall alteration (Department of Justice, 2010). This cost factor could prevent any number of alterations from happening, including a path of travel, restroom accessibility, and communications assistance. A person with a disability could be denied entrance to a public service if it cost too much to widen a path or doorway. Denying those with disabilities is exactly what ADA set out to prevent, but the language continues to allow discrimination.

One of the most common phrases found within the legislation regarding updating the built environment to comply is "to the maximum extent possible" (United States Access Board, 2018). This phrase, along with "within reason," is widely defined and interpreted throughout this legislation and others relating to the built environment, such as the Fair Housing Act from the Department of Housing and Urban Development.

Among professionals in the field, there are mixed feelings about ADA. While reasoning changes from person to person, the general consensus is that the standards get in the way. Some find them to be a barrier in the design process, adding one more item on the list of restrictions of what they can and cannot do. Others see them as a barrier to progress and true Universal Design. Textile designer Suzanne Tick, a proponent for gender-neutral design, falls into the latter category. She views the ADA standards as "a disaster…it's unbelievable how hard it still is to find accessible bathrooms and entrances" (Tick, 2015). She believes that the standards limit designers to think inside the box; that they do not think about how to creatively integrate the standards seamlessly into their designs.

Others also view ADA as a disaster of sorts, but they believe the requirements are too excessive and not necessary. As these people view the disabled community as a small minority

of permanently disabled people, they do not believe that public buildings should make specific or generalized accommodations for their needs. In a thread posted on the forum of Archinect, a website “connecting architects since 1997,” it is quite appalling to read what some designers believe about ADA and those with disabilities (Archinect, 2017). Some defend the standards and those with disabilities, while some are angry with the stringency of the standards and are angry about having to accommodate in the first place. It is the hateful, ignorant words of these designers that solidify a need for further research on accessible design and education on why it is important to the future of the design profession.

The norm of minimums, as discussed in this chapter, is widely held by many in society but does not have much research backing. The intent of this research is to quantify the norm of minimums as a part of a larger discussion on improving accessible design. In designing the study, several precedent research studies shed light on efforts already underway to address the issues with accessible design.

1.5 Precedent Studies

As accessibility is a relatively new development when looking at human history, it is understandable that the effects of the accessible legislation do not have much research backing. Additionally, accessibility continues to be a tricky topic since there are so many different kinds of disabilities that affect people differently day to day.

Of the research available, most studies focus on assessing the accessibility of existing spaces. Additional research focuses on assessment tools and information for existing facilities to ensure they comply. As mentioned previously, the United States Access Board developed many such tools for ensuring compliance, as the ADA Standards for Accessible Design are difficult to navigate even to the trained eye. Four items, three articles and one assessment tool, show the

direction of the research, limitations of existing research on this topic, and influences on the design of the research presented in this paper.

The first article, while quite narrowly focused on a technical field, discusses the confusion surrounding the term “accessibility” and how it is measured. From the Journal of Transport Geography, Geurs and Wee (2004) review existing measurement tools and discuss future research in their article *Accessibility evaluation of land-use and transport strategies: review and research directions*. In reviewing existing tools and measures, this study differs due to the broad range of criteria assessed, the theoretical applications, the interpretability of the tools, and usability (Geurs & Wee, 2004).

Defining accessibility within the context of this work is vital to truly understand what is measured and compared, as accessibility can have many different meanings and interpretations. Geurs and Wee define accessibility as “the extent to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by a means of (combination of) transport mode(s)” (Geurs & Wee, 2004, p. 128). This definition shaped the entire study and greatly influenced the primary investigator in this research to attempt to better define accessibility for the built environment.

They compared various accessibility measures analytically across numerous components to determine if the measures satisfied the criteria, were easy to interpret, and were usable as an indicator of accessibility. With so many tools for assessing the accessibility of the geography, this study provides data to assist others in selecting the correct tool for the specific type of accessibility they are seeking to measure. Just as the United States Access Board has multiple tools and resources for interpreting ADA, it is important in assessing minimum design standards to select the appropriate measurement tools and criteria.

The second article focuses on accessibility of a University classroom, utilizing the ADA standards to improve conditions for disabled students. Hilliard, Dunston, McGlothlin and Duerstock (2013) saw a lack of disabled students in science majors as a direct result of inaccessible labs on campus. In working to re-design the lab space to be accessible and more approachable for all users, they described the specific design interventions and how these interventions directly resulted from the combination of the ADA Standards for Accessible Design, the International Safety Equipment Association (ISEA), and American National Standards Institute (ANSI) (Hilliard, Dunston, McGlothlin, & Duerstock, 2013).

In Purdue University's Discovery Park, an interdisciplinary lab set the stage for the proposed updates with a centralized focus on the "laboratory work triangle" (Hilliard, Dunston, McGlothlin, & Duerstock, 2013). Borrowed from the concept of the work triangle in residential kitchens (sink to refrigerator to stove) as seen in Figure 2, the laboratory work triangle combines the work bench, the sink, and the fume hood, as seen in Figure 3.

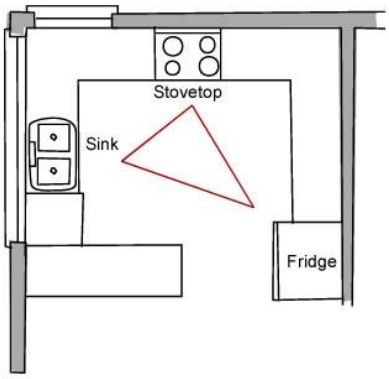


Figure 2: The kitchen triangle for optimum efficiency. Retrieved from http://www.build.com.au/kitchen-work-triangle-and-beyond

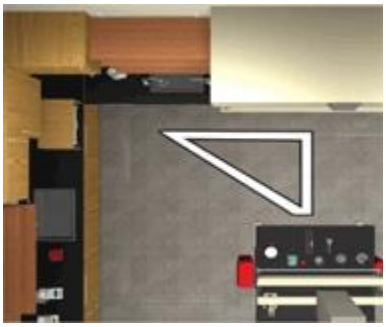


Figure 3: The laboratory work triangle. Photograph. Retrieved from

The challenge in executing this triangle was combining enough clearance for accessibility while maintaining proximity for efficiency within the lab. This proximity is not only for ease of use but also for safety in the transfer of chemicals and solutions.

Those working on this renovation found the standards to be helpful in some respects but altogether "broadly prescriptive" (Hilliard, Dunston, McGlothlin, & Duerstock, 2013). The

height specifications for various lab elements such as eye wash stations had no recommendation to accommodate those with disabilities and the ADA standards provided vague height requirements as well. With not much crossover between the two or ability to integrate the two easily, they had to innovate and find creative solutions.

One of the best ways that this team could find solutions that would actually work was to collaborate with a neuroscientist "who uses a power wheel chair due to quadriplegia" (Hilliard, Dunston, McGlothlin, & Duerstock, 2013). This man was able to test out ideas in person to see if the proposed solutions would actually benefit those in wheelchairs. While this solution fails to encompass all types of physical disabilities, it takes a step in the right direction.

The first component of the laboratory work triangle considered for modification was the work bench. Typically, labs had stationary tables but a height-adjustable table proved to be the best solution to improve accessibility, with power controls to raise and lower the work surface, as shown in Figure 4. Many features of the lab were also improved to have automatic or power-operated sensors in order to accommodate for various disabilities include visual and auditory.

Figure 4: Height adjustable work bench with power controls.

The second component of the triangle was the sink, which was replaced by following the minimum ADA standards for sink height and knee clearance. They increased the ease of use of this sink by moving the controls closer to the front edge of the sink, as shown in Figure 5. This prevents users from unnecessary reaching and could also aid in safety.

Figure 5: Sink adjustments aid in ease of use for all users.

The last component of the triangle, the fume hood, had modifications similar to the sink. They lowered the overall height and granted access beneath the hood for wheelchair roll-under allowance. Additionally, they switched out the existing controls for blade handles to allow users with grip mobility limitations to utilize the hood safely.

The most unique aspects of this project were the modifications to the safety equipment, as it is uncommon for these items to have accessible accommodations readily available. As long as all components of the safety equipment were present, modifications to height or levers were not a legal problem at all. They raised the eye wash basin to allow for wheelchair users to roll under without obstruction and to prevent falls from leaning forward. An additional lever added another component of access for the safety shower and enhanced signs made the equipment easy to find for those with visual impairments.

The University created blue prints of the modifications to their lab for use by other institutions, as they believe as many people as possible should benefit from the accommodations. As is discussed in any study of accessible accommodations, cost came up as a potential barrier to implementation, though they recommended integrating each solution as equipment needs replaced or as budget allows. This study shows how accessible design can integrate to work with other regulations, as well as how putting actual users in the space can show the limitations of minimum standards.

Just as the U.S. Access Board provides interpretation tools for businesses to better understand the standards, other government agencies also published works to assist the businesses they most closely collaborate with. The Centers for Disease Control and Prevention (CDC) established “The Built Environment: An Assessment Tool and Manual” in July of 2015 to assist health facilities in recognizing the most critical areas of accessibility in their facilities and

how to measure and assess them. As health facilities maintain strict regulations for the built environment, it can be difficult to understand compliance, to understand how to check for compliance, and to understand which compliance items take priority (National Center for Chronic Disease Prevention and Health Promotion, 2015).

This assessment tool provides the audience with reasoning to explain the importance of measuring the built environment as well as the tools to do so. They provide additional resources throughout, and graphics assist in knowing what to measure in the field. The training information is particularly helpful, as it allows for any person on the staff of these facilities to assist in measuring the built environment and to understand the implications of the data.

This assessment tool assisted the primary investigator in forming training documentation for this paper as well as in guiding the formation of the data coding and assessment questions. It also inspired the overall study design, as a measurement tool would allow for quantitative data on accessibility, which is often a qualitative construct.

The final precedent study considered most closely resembled the design of this research, as it focused on the definition of accessibility and what the term means when compared to compliance. *Universal Accessibility of "Accessible" Fitness and Recreational Facilities for Persons with Mobility Disabilities* measured features of recreation facilities in Ontario to determine if compliance of the building actually equated to accessibility for disabled persons. Equality is at the forefront of this study, as Arbour-Nicitopoulos and Ginis (2011) determined that the facilities studied need further improvement to meet universal accessibility. Though this study took place in Canada and standards are different across borders, the research still shows the importance of going beyond the standards and why that extra push beyond matters.

A unique aspect of this study is the qualitative and quantitative nature of the data collected, measuring physical elements of the fitness facilities as well as social aspects. This mixed-method approach inspired the combination of quantitative and qualitative research in this study. The 2011 study examined fifty-six facilities using the AIMFREE scoring manual to assess whether particular locations/items were or were not free from obstacles. An additional aspect of the research in this paper that was taken from Arbour-Nicitopoulos and Ginis's study is the method of double evaluation: once by the primary investigator and again by a trained researcher for validation.

This study considered many variables, from demographic information to type of fitness facility to programming offered at each facility. They found significant differences between accessibility of various facility types and with various programming. Only a mild correlation existed between accessibility of programming and the general accessibility of the facility, but overall, facilities had a balance of good and improvable features in terms of accessibility. The largest concluding implication discussed a need for improved accessibility of fitness and recreation centers. This precedent shaped the design of the research in this paper significantly in terms of methodology, study design, and overall research objectives.

2. Characteristics of Accessible Design

2.1 Definitions

For the purposes of this study, several terms require defining for clarity of understanding. A large part of the problem addressed by this research is the inconsistent definitions by which professionals involved in the field interpret these terms. Definitions come from a combination of the primary investigator's intent with the research, the Merriam Webster Dictionary, and industry

sources as cited throughout. A majority of these terms were included in the training documentation for participant researchers, as found in Appendix H.

- **Accessibility**: capable of being used or seen; capable of being understood or appreciated; the quality of being easy to obtain or use (Merriam Webster, 2018). All three definitions apply in determining accessibility of the built environment in relation to ADA Standards for Accessible Design.
- **ADA**: "The Americans with Disabilities Act (ADA) became law in 1990. The ADA is a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public. The purpose of the law is to make sure that people with disabilities have the same rights and opportunities as everyone else. The ADA gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. The ADA is divided into five titles (or sections) that relate to different areas of public life" (U.S. Department of Health and Human Services, 2014). This definition was provided in the training to give a broad perspective of ADA.
- **Standard**: something established by an authority, custom, or general consent as a model or example; something set up and established by authority as a rule for the measure of quantity, weight extent, value, or quality (Merriam Webster, 2018).

- **Code**: a systematic statement of a body of law; a system of principles or rules. Code in the design field is synonymous with law (Merriam Webster, 2018).
- **Guideline**: an indication or outline of policy or conduct (Merriam Webster, 2018).
- **Clear width**: Clear distance measured between walls or other fixed obstructions (except permitted localized obstructions) or across a path (Designing Buildings Ltd., 2018).
- **Slope**: rise over run; a ratio of the height and distance covered by a ramp or other elevated surface.
- **Door width**: the measurement of the actual door; height and width of a door within a door frame (Designing Buildings Ltd., 2018).
- **Door swing**: the area in which a door takes up space when opening or closing. Typically doors are designed so that their door swing will not interfere with any other objects or obstructions (Designing Buildings Ltd., 2018).
- **Egress**: a place or means of going out; the action or right of going or coming out (Merriam Webster, 2018).
- **Minimum**: the least quantity assignable, admissible, or possible; the lowest degree or amount of variation (Merriam Webster, 2018).
- **Centerline**: a real or imaginary line that is equidistant from the surface or sides of something (Merriam Webster, 2018).
- **Clear space**: an area in which no obstructions or interferences occur; the open space adjacent to, in front of, behind of, or generally surrounding an object to allow for access to the object. Example: There were three feet of clear space in front of the sink so she could easily get to it from the door (Designing Buildings Ltd., 2018).

- **Roll-under**: an item in which a wheelchair user would be able to approach and use the item from their seated position without interference or obstruction of the item (Designing Buildings Ltd., 2018).
- **Clearances**: the distance by which one object clears another or the clear space between them (Merriam Webster, 2018).
- **Disability**: a physical, mental, cognitive, or developmental condition that impairs, interferes with, or limits a person's ability to engage in certain tasks or actions or participate in typical daily activities and interactions; impaired function or ability; a disqualification, restriction, or disadvantage (Merriam Webster, 2018).

3. Case Study Buildings

In considering the scope of this project, ten buildings were selected for study for a variety of reasons:

1. Architecture Hall
2. Richards Hall
3. Union
4. Love Library North (Adele Coryell Learning Commons)
5. Burnett Hall
6. Canfield Administration Building
7. Nebraska Hall
8. Hamilton Hall
9. Mary Riepma Ross Media Arts Center
10. Hawks Hall (College of Business)

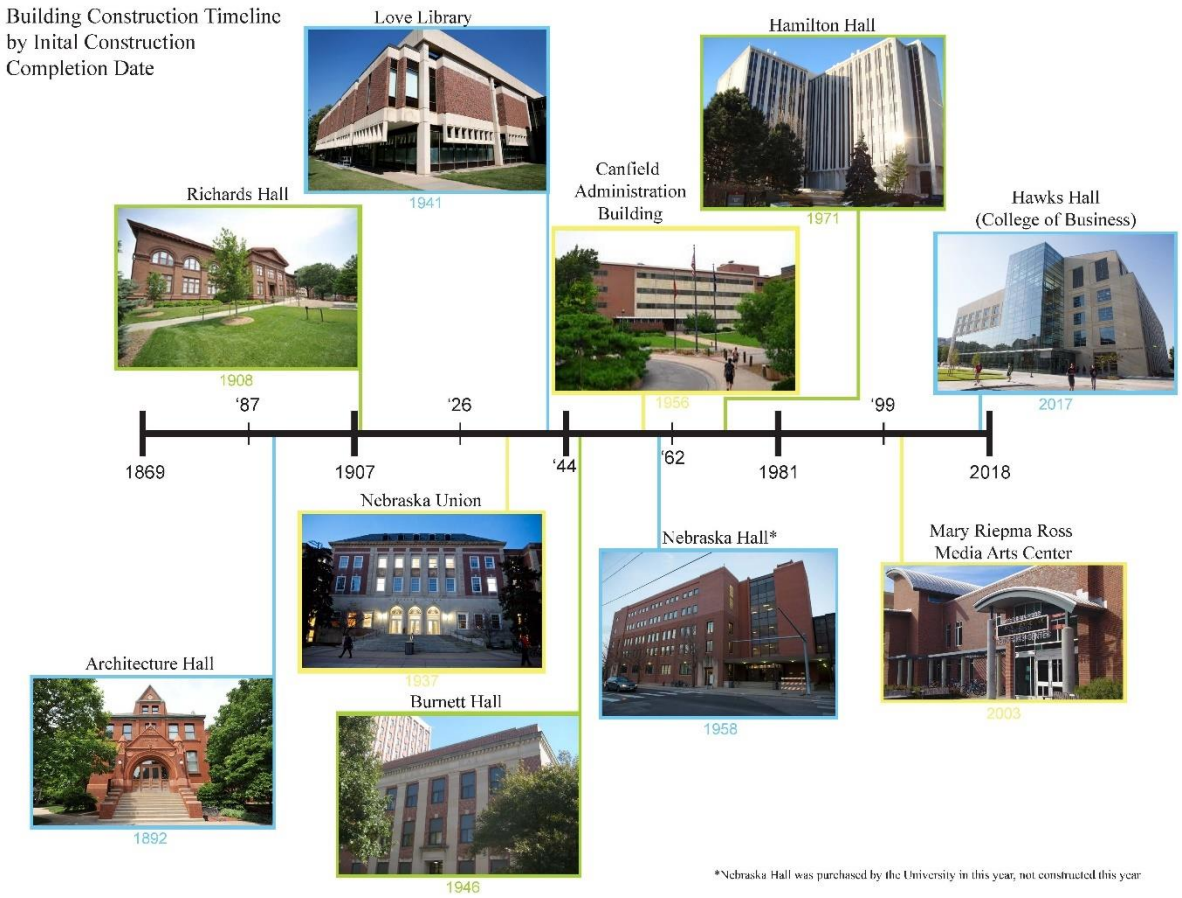


Figure 6: Building Construction Timeline by Initial Construction Completion Date. Created with Adobe Illustrator. Photographs cited later in chapter.

In reviewing the history of the University and the construction of its buildings, these ten buildings were selected because they cover a range of completion dates dating from the only 19th century building remaining on campus to the most recently completed building on campus.

While initial construction was a factor, renovation and update history were also considered, as the extent of renovations determines the extent of compliance for ADA. These buildings were also selected as they represent a broad range of use across the campus, from mixed use to classrooms as well as administrative. Residence halls were not included in the study, as ADA covers public use spaces and places of residence do not follow the same requirements.

In addition to the initial construction date of each of the buildings, requests were sent to the University ADA Compliance Officer, Christy Horn, to detail the renovation history of each building, to learn when the last ADA compliance check took place, and to see if there is an ADA implementation plan for the buildings based on future construction plans and the result of the audits. Unfortunately, Christy Horn passed away during the time in which the project was awaiting IRB approval and the compliance office was not able to fulfill the requests.

Despite not knowing much about the implementation plans of each building, a broad assumption can be made about the accessibility requirements of each building, as buildings constructed after the Architectural Barriers Act of 1968 would be legally required to comply to the standards set at that time. The only building included for data collection that should be completely compliant to the latest publication of the Standards is Hawks Hall, also known as the College of Business building, as it was completed in 2017, five years after the implementation date for the 2010 ADA Design Standards.

A majority of the buildings also allow access to all students outside of business hours, making them flexible options for research participants to collect data when convenient. Buildings are listed in order of construction, with the exception of Nebraska Hall which utilizes the date of purchase by the University for purposes of the timeline. A brief history of each building is included below, with the primary source of information as a UNL Libraries Digital Archive of Historic Buildings on campus (Logan Peters, Rickel, & Bajaber, 2005). **3.1 Architecture Hall**

Figure 7: Architecture Hall present day. Photograph. Retrieved from: http://www.dailynebraskan.com/news/most-historically-significant-buildings-at-unl/article_0ceb7cfa-6eb4-11e4-9f96-bb5ea2f0d054.html

Architecture Hall was constructed in 1892, designed by Mendelssohn, Fisher and Lawrie of Omaha. Though the Board of Regents approved the project in 1891, an economic depression delayed the completion of the building until 1895 (Logan Peters, Rickel, & Bajaber, 2005). This building is the only remaining 19th century building on the University of Nebraska-Lincoln campus. Originally intended as the campus library, Architecture Hall was dedicated in 1895, with space for 250,000 books.

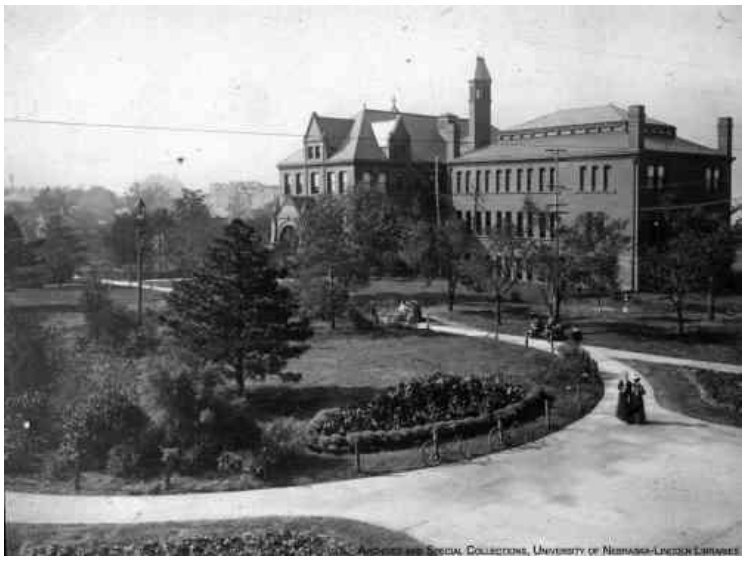


Figure 8: Old Library after construction, later became Architecture Hall. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

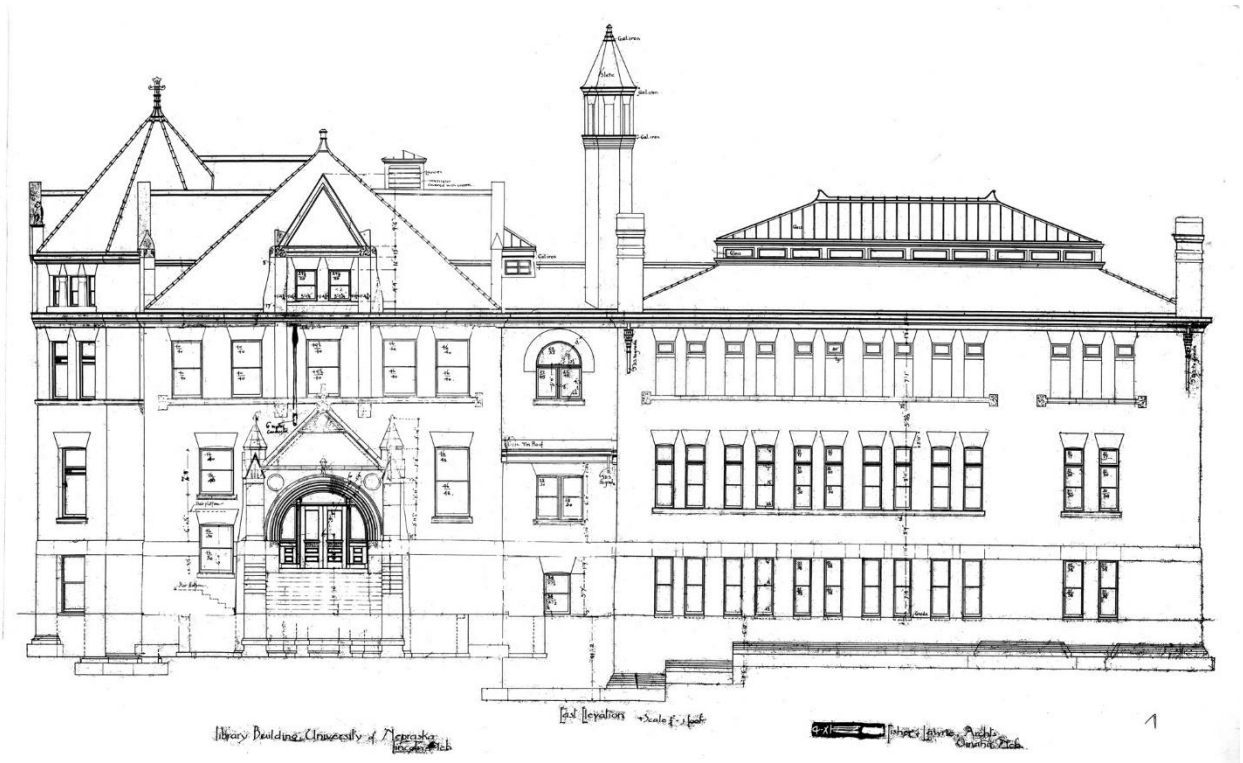


Figure 9: Exterior Elevation of Architecture Hall. Sketch. Retrieved from: http://historicbuildings.unl.edu/index.html

This building would survive a boom of construction and renovation on the campus due to the fire-proof design and timeless Richardsonian Romanesque style (Logan Peters, Rickel, & Bajaber, 2005). Architecture Hall would eventually expand to additional facilities, combining with the Law College building in the late 1980s.

Figure 10: College of Law Building. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

The College of Law building, pictured left, was constructed in 1912 by Berlinghof and Davis. The building would undergo various updates throughout the 1920s and 1950s, including the addition of library stacks to the North side of the building in 1957 (Logan Peters, Rickel, & Bajaber, 2005). Quite soon after Architecture Hall was established on the National Register of Historic Places in 1975, the Old Library and College of Law buildings would undergo a $4.4 million renovation including the addition of a connecting “link” to combine the two historic buildings into one facility for the College of

Figure 11: Interior view of the "link" connecting Architecture Hall to the College of Law Building. Photograph. Retrieved from: https://nufoundation.org/-/unl-college-of-architecture-college-of-architecture-building-for-the-future-fund-01139350

Architecture (Logan Peters, Rickel, & Bajaber, 2005). While small projects have taken place over the years since the buildings were linked, students using the facilities both appreciate the history and lament its interior design consequences.

3.2 Richards Hall

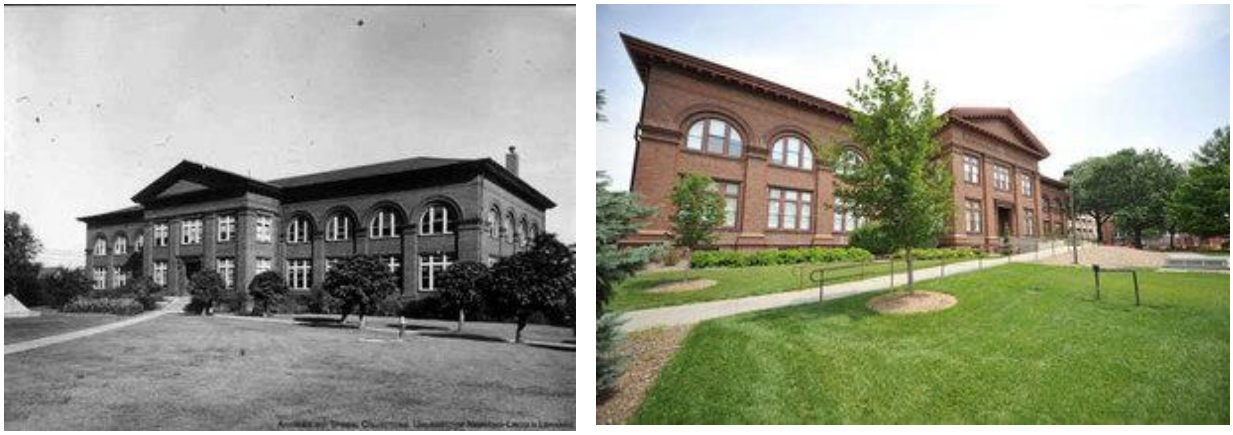


Figure 12: Left: Historic Richards Hall, known then as Mechanical Engineering Laboratories. Right: Present day Richards Hall. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

Richards Hall was constructed in 1908 by F.P. Gould and Sons, originally called the Mechanical Engineering Laboratories. Students petitioned the University in 1944 to rename the building Richards for C.R. Richards who was the first Dean of the College of Engineering on campus (Logan Peters, Rickel, & Bajaber, 2005). Originally constructed as a hub for practical applications/experimentation for engineering, the building now functions under the College of Arts and Sciences, primarily as art studios.

This building is the only one of its style on the campus, as it was described as "Roman-Doric" at the time of construction, which is known today more commonly as Italianate or Renaissance Revival (Logan Peters, Rickel, & Bajaber, 2005). Richards Hall underwent a large renovation in 2000 to better accommodate the arts facilities. As is visible in the side by side images in Figure 12, the south entrance staircase was replaced with a ramp- a move of Universal Design which makes this building's access one of great equality for all people.

3.3 Union

Figure 13: Nebraska Union South entry. Photograph. Retrieved from: http://www.dailynebraskan.com/news/nebraska-unions-board-looks-for-students-to-weigh-in-on/article_f42061ae-9858-11e3-896f-0017a43b2370.html

The Nebraska Union is one of the most iconic buildings on campus, as it has been a staple for students since its opening exactly 80 years ago. Designed by Davis & Wilson Architects, the building opened in 1938. With renovations and updates every few years, this is one of the older buildings with some of the newest features, making it a fascinating building for assessment. The 1937 iteration came to life from the efforts of students, particularly Jack Fischer of Valentine, NE who submitted a proposal to the Board of Regents for a new Union building. Due to

Figure 14: 1937 Union. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

The Great Depression, resources were limited across the nation on Universities for new construction. Fortunately, the Public Works Administration advertised financial assistance to offset the costs of new University buildings, but the Board of Regents refused (Logan Peters, Rickel, & Bajaber, 2005). Additional coaxing from Fischer, alumni, and the Public Works Administration themselves finally convinced the Board of Regents. Of the updates to the building, the most prominent came in the years 1959, 1969, and 1999, pictured left. A multicultural center was also added to the East side of the building in 2010.

Figure 15: 1959 North addition to the Union. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

Figure 16: 1969 update to the North facade. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

Figure 17: 1999 update to the North side. This facade exists today. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

Since these additions, the Union has also had numerous interior renovations, from the updates to the Crib space in 2014 to the recent restroom renovation completed near the end of 2017. As the central hub for students, it makes sense why so many resources are poured into this facility.

As shown in Figure 15 above, the 1959 addition to the Union strayed from the vernacular to take on the mid-century modern style of the time. The 1969 addition accommodated the rapid

enrollment of the university simply to meet the demand of the student population, while the 1999 addition was planned roughly five years before completion and was designed to match the style of the original building. As the landmark building for the campus, future renovation and improvement plans have been in the works and continue to gather data and resources.

3.4 Love Library

Love Library was built in 1941, though the need for a new library space arose in 1911 when the old library (Architecture Hall) ran out of room for library collections (Logan Peters, Rickel, & Bajaber, 2005). The building was designed to utilize a "divisional plan," which was a modern system of organization for libraries. This style of organization would remove barriers to information, allowing students to directly access the thousands of books and resources in the space.

Figure 18: Postcard of Love Library North facade. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

This building was another in the era of Davis & Wilson Architects, with limestone and brick used to resemble other buildings of the time. An addition to the facility was added in 1972, which is now known as Love Library North. This area was the focus of the building audit

Figure 19: Love Library North, constructed in 1972 and updated in 2016. Photograph. Retrieved from: https://libraries.unl.edu/

because of its connection to the original building, its addition, and its recent renovation into the Adele Coryell Learning Commons.

The Learning Commons is one of the most popular study locations on campus today because of the updated facilities, relative ease of access, and proximity to other campus buildings. With study break out rooms and various styles of furniture, all different kinds of study styles are accommodated.

Figure 20: Interior of the Adele Coryell Learning Commons. Photograph. Retrieved from: https://libraries.unl.edu/learning-commons

3.5 Burnett Hall

As one of the longest delayed buildings on the campus, Burnett Hall was designed in 1928 to be a companion to Andrews Hall but was severely postponed until 1946. From

Figure 21: Burnett Hall following initial construction. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

The Great Depression to World War II, Burnett Hall was pushed to the wayside as a non-essential project to the campus at the time.

The building was designed as a general classroom facility, named for Chancellor Burnett who saw the University through the dismal years of the Great Depression and retired in 1938. Davis & Wilson also had their hand in this building to match it to Andrews Hall, though resources were limited from the war and some compromises had to be made. Today, Burnett houses the Department of Psychology and still serves as a building for general classroom courses. Despite small changes, this building has remained largely the same as when it was constructed, making it an appealing choice for data collection.

Figure 22: Present day Burnett Hall. Photograph. Retrieved from: https://psychology.unl.edu/pcc/home

3.6 Canfield Administration Building

Figure 23: Canfield Administration Building initial construction. Photograph. Retrieved from: http://historicbuildings.unl.edu/index.html

The Canfield Administration building is a product of its generation: sleek and streamlined to match the mid-century style of its construction year of 1958. After the building shortage due to The Great Depression, the University was in dire need for additional buildings to support infrastructure. In accordance with the popular designs of Le Corbusier, original designs by Hazen and Robinson called for movable walls and an open plan, though the final product has more permanence (Logan Peters, Rickel, & Bajaber, 2005). As an annex to the Teacher's College Building built in 1919, the interior remains slightly disjointed at the seam.

Updates to the building are minimal, though housing the Services for Students with Disabilities (SSD) Office has forced accommodations of accessibility. As a combination of various eras and

Figure 24: Canfield Administration today. Photograph. Retrieved from: http://newsroom.unl.edu/announce/cse/1465/8290

a different building use, this building gave various interest points for observation.

3.7 Nebraska Hall

Figure 25: Nebraska Hall Present Day. Panguripan, Irwin. Photograph. Lincoln, NE. Retrieved from http://www.dailynebraskan.com/news/nebraska-hall-prepares-for-power-outage-for-electrical-updates/article_815f9c56-c5c8-11e7-a765-4305f90f566b.html

Though the listed date for Nebraska Hall is 1958, this date is when the University purchased the building. Prior to becoming Nebraska Hall, a building whose primary use is for the College of Engineering, the Elgin Watch Factory owned the space (Elgin Watch Company, 2018). This company purchased the building from the Elastic Stop Nut Plant in 1945, who only occupied the building for three years (The Lincoln Journal Star, 1942). The Union Terminal Warehouse initially owned the building, which they constructed in 1932 (The Lincoln Journal Star, 1932). The building was described as “one of the finest in the Midwest” (The Lincoln Journal Star, 1932, p. 12), as it boasted fire proof construction and drew business in from many

local industries. Davis & Wilson Architects designed the building, along with many of the other buildings on this list. The original building had roughly 220,000 square feet and over time, the Elgin Watch Company essentially doubled its footprint.

As Nebraska Hall was also the name of a since demolished building on the campus built in 1887 (Figure 26), information on the newer Nebraska Hall is difficult to come by. Following the purchase of the building in 1958, it is unclear what purpose the building served until 1971 when the College of Engineering moved into the West side of the space.

Figure 26: Old Nebraska Hall. Photograph. Lincoln, NE. Archives and Special Collections, University of Nebraska-Lincoln Libraries. Retrieved from http://historicbuildings.unl.edu/image_gallery.php?type=building&id=8

Nebraska Hall was referenced in the strategic plan for the University Systems in the 2016 Capital Plan with plans to update classrooms and infrastructure in Nebraska Hall and the adjacent Engineering facilities (University of Nebraska, 2016). While many of the classrooms have since been updated, most of the building remains untouched. Today, the building houses the Durham School of Construction Engineering and Construction Management, Civil Engineering, Mechanical and Materials Engineering, and the Engineering Library (Morrow, 2017). It also houses the departments of Criminology and Gerontology, or the study of aging.

3.8 Hamilton Hall

Figure 27: Hamilton Hall. Photograph. Retrieved from: https://www.elkhornwest.com/project-gallery/nggallery/2008/unl-hamilton-hall-elevator-upgrade

Hamilton Hall was constructed in 1971 to serve as laboratory space for the Department of Chemistry and it still serves that purpose today. Not much building history is available for buildings constructed after 1965 other than news of renovation or improvements to the facilities. As the Chemistry Department is very strong on campus and lab equipment must be updated quite frequently, there have been numerous updates to the building over the years. In 2004, the building underwent a $17.6 million infrastructure update that took several years to complete, as classes wore on and the building remained in use throughout the entire process (Overmyer, 2004). Laboratories, classrooms, and common spaces were also updated in 2013, though the

changes are not apparent from the first floor of the building, where the materials from the 1970s still exist in abundance (Gayman, 2013). It is hard to believe that the interior spaces shown in Figure 28 exist within this building.

Figure 28: Renovated classroom in Hamilton Hall. Photograph. Retrieved from: Canfield Administration Building initial construction. Photograph. Retrieved from: http://www.roncoomaha.com/portfolio/educational/unl-hamilton-hall-renovation

3.9 Mary Riepma Ross Media Arts Center

Jumping forward several decades, the next building selected for study is the Mary Riepma Ross Media Arts Center, constructed in 2003 to adjoin the East side of the existing Temple building and adjoin North of the Van Brunt Visitors Center (University of Nebraska Lincoln, 2018). The Ross Center is a theatre for independent film that combines classroom space, film storage, and a multitude of other film features that make it a unique and state-of-the-art facility. Two large lecture halls accommodate both film viewings and University lectures.

Figure 29: Exterior of the Mary Riepma Ross Media Arts Center. Photograph. Retrieved from: https://arts.unl.edu/theatre-and-film/facility/joseph-h-cooper-theater

Figure 30: Interior of the Ross Center, the Joseph H. Cooper Theater. Photograph. Retrieved from: https://arts.unl.edu/theatre-and-film/facility/joseph-h-cooper-theater

3.10 Hawks Hall (College of Business)

Figure 31: Exterior view of Hawks Hall, the new College of Business building. Photograph. Retrieved from: https://news.unl.edu/newsrooms/today/article/howard-l-hawks-hall-opens-for-business/

Just completed for the fall semester of 2017, Hawks Hall is the newest complete construction project on the University's campus. As the College of Business (formerly the College of Business Administration) quickly outgrew their building just west of the Union, plans to create a new independent facility farther north on campus took shape. As a complete separation to the vernacular of the campus, the building boasts a modern architecture while referencing the campus with a limestone exterior. The $84 million project spanned five years and was purposely designed to differ from the campus to draw attention to the college (Roper, 2017).

While students seem to love their new building, many saw the building as an eyesore in the line of sight west to Memorial Stadium, the hallmark of landmarks on the campus. Only time will tell how the campus community will adapt to the new building and what perceptions they

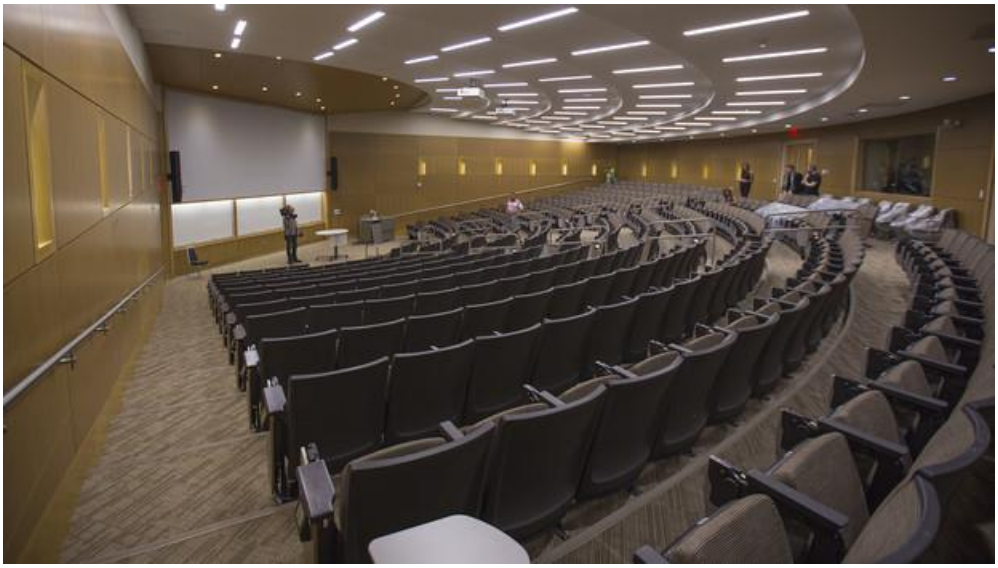


Figure 32: Lecture hall inside Hawks Hall. Photograph. Retrieved from: https://news.unl.edu/newsrooms/today/article/howard-l-hawks-hall-opens-for-business/

may have. As the newest building on campus, it should be in total compliance to the ADA Standards for Accessible Design. This building was especially important in the data set, as it would truly show if the campus is making efforts to reduce minimums and adapt principles of Universal Design.

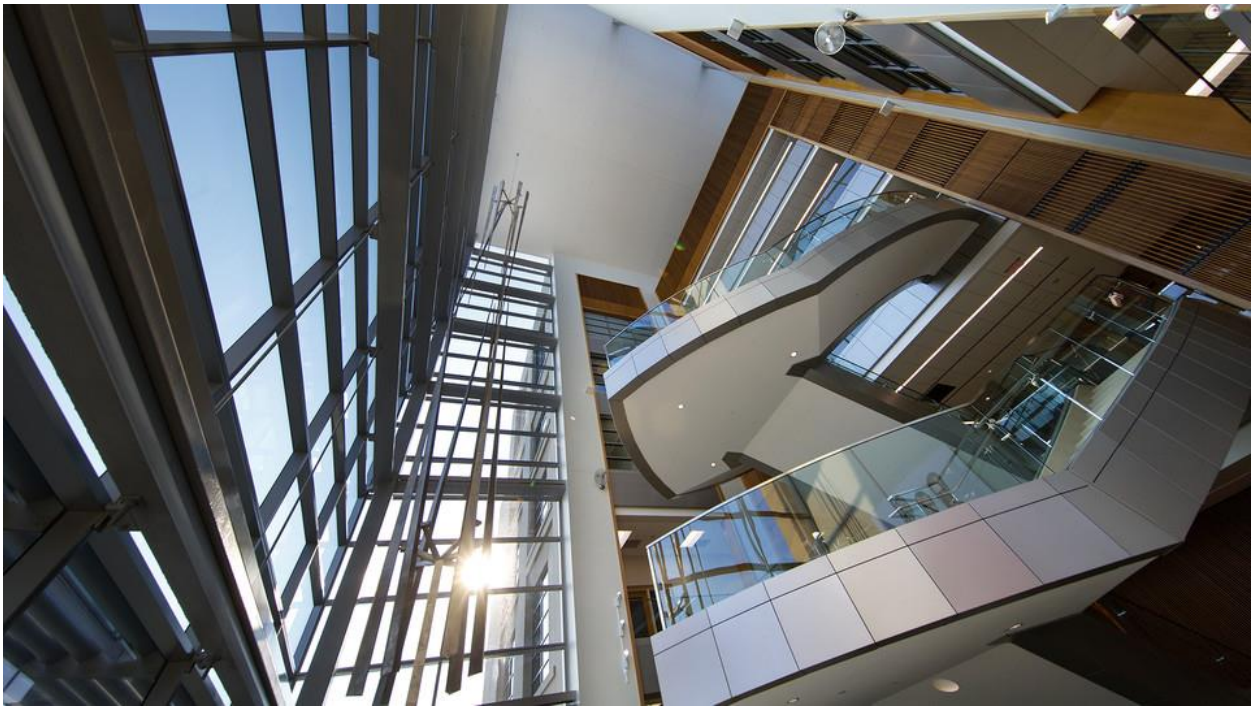


Figure 33: Feature staircase inside Hawks Hall. Photograph. Retrieved from: https://news.unl.edu/newsrooms/today/article/howard-l-hawks-hall-opens-for-business/

4. Explanation of Methodology

4.1 Study Development and Procedures

This research study is comprised of several steps to be followed in order to properly follow the research protocol:

1. Request ADA compliance information and infrastructure floor plans of selected buildings
2. Distribute participant recruitment flyers across campus
3. Data collection by the Primary Investigator
4. Participant Selection
5. Participant Informed Consent and Training
6. Data collection by the Participants
7. Survey of Participants
8. Participant Compensation
9. Data Analysis
10. Participant Debriefing

The study was designed to take place over a two-week period that would commence upon IRB approval. While many documents and assessment tools were established prior to and submitted for approval, there were several steps that had to occur after approval but before any data collection. These steps included requests for ADA compliance data, infrastructure requests for floor plans of each of the buildings selected for data collection, and distribution of participant recruitment flyers.

As discussed in chapter three, compliance data on the buildings would be helpful in understanding the extent to which each building is compliant. Infrastructure requests of building floor plans would provide wayfinding for the research participants who may not have ever been

in these buildings before. As these floor plans could be dangerous in the wrong hands, the University Police has required that the plans not be included in this research. An example plan, as submitted to IRB, is shown within Appendix J. In order to complete the study in a timely manner, participant recruitment flyers were distributed immediately to various buildings on campus.

Following these initial steps, procedure dictates that the Primary Investigator collect, but not analyze, the data from all ten buildings on campus. This means that the primary investigator conducted all audits herself over a weeklong period and then set aside the data until after training the participants and allowing them to complete their research. Analysis was delayed so as to avoid any researcher bias in training research participants. After vetting of research participants, selected participants were asked to schedule their training session on the first business day of the data collection period. Training took place in Room 108 of Architecture Hall, a room designated for the Primary Investigator to conduct thesis research by the Dean of the College of Architecture. Each participant would be trained separately on this day following acknowledgement of Informed Consent (Appendix G).

At the start of their scheduled data collection time(s), participants were instructed to come back to Room 108 to retrieve data collection tools. Participants were then instructed to complete their audit(s) and return the materials directly to the Primary Investigator in Room 108, as the Primary Investigator would remain in Room 108 for the entirety of participant data collection times. Upon completion of all audits, participants completed the anonymous survey and placed it within an envelope that was not opened by the Primary Investigator until all surveys were complete. Participants received compensation following their final audit and survey

completion and later received a debriefing email after the Primary Investigator analyzed the data collected.

4.2 Participant Selection

To recruit participants for the research study, flyers were posted in various buildings on campus and an email was sent with recruitment information. Participants had to fulfill the following criteria:

> *Eligible participants include UNL students, faculty, and staff aged 19-65 of all gender identities who speak and can read the English language.*

Figure 34: Selection criteria for participants from recruitment flyer, Appendix E.

Unfortunately, the pool of volunteers was rather small. Seven volunteers, five female and two males, were all eligible to participate. Availability during the data collection period further limited the volunteer pool, leaving just four participants all identifying as female. Ideally participation would have been split equally between male and female gender identities to provide equal representation on restroom data collection, but as the questions surrounding the restroom do not require measurement of urinals or other items that may only be found in specifically gendered restrooms, this did not negatively impact the data collection or validity of the study. Additionally, all participants were students, as no faculty or staff volunteered.

As only four participants were able to commit to the study, they were all asked if they would like to take on an additional audit for additional compensation. Two participants volunteered, to take on one additional audit each; two participants conducted two audits while the other two conducted three audits.

4.3 Participant Training

Within their training sessions, each participant first read and signed an informed consent document (Appendix G) to ensure they fully understood the extent of the data collection and entire study. As shown through the Certificate of Exemption (Appendix A), this study was

deemed to have “less than minimal” risks so informed consent was not required but was included for transparency. The study also does not include any form of deception. Following the informed consent, each participant received a training packet (Appendix H) with a more detailed description of what they would be doing within the study, definitions of terms that would be used in the audit, and an exercise in site measuring to ensure the participants knew how to properly use a tape measure. Participants were allowed to retain the training packet and were encouraged to bring it with them during their data collection sessions.

During the training session, participants scheduled their data collection times for later in the week. Each participant was asked to schedule a one-hour time slot for each audit to be completed between 8 am and 5 pm during the business week. As many of the buildings on campus lock after hours for students who are not a part of the particular college or department located within, these measures were taken to ensure access to the buildings. If a participant requested to collect data outside of these times, the primary investigator ensured that their particular building could accommodate the later hour prior to scheduling.

Participants were informed of their building assignments at the time of training and could choose to schedule their data collections back to back if they desired or at different times. To conclude the training session, participants filled out a compensation form to list the establishment(s) in which they wished to receive their gift card(s) from (Appendix I). Each audit earned a $5 gift card. Participants were also informed that a short survey would be given to them following their last data collection and following completion of the survey, they would receive their compensation. Additional debriefing would also occur once data collection was complete via email.

Each training session and data collection time for participants was scheduled so as to keep the identities of each participant private. While knowing the identities of other participants would not negatively affect the study, it was an extra precaution for the benefit of the participants and their right to privacy. Participant ID codes also encouraged honest and complete answers on all questions, as no identifying information could be tied back to a particular answer given or data piece collected.

While documentation of all correspondence between participants and the primary investigator is kept on record, identifying information within those records is password protected for the primary investigator's eyes only. Again, these precautions were taken out of consideration for the participants and to encourage honest answers throughout.

4.4 Audit Development

In evaluating the best way to measure features of accessibility, the ADA Checklist for Readily Achievable Barrier Removal (Appendix B), was the answer. This tool is used in analyzing features of existing buildings. With simple explanations of how to measure particular features and suggestions on how to improve if the feature falls short, this document provided an extensive foundation for the audit development. Additional sources included the ADA Standards themselves and the fourth precedent study discussed in an earlier chapter.

Primary areas of focus include egress, access to the most public spaces within each building, and restrooms. These three areas of focus are the top three priorities as listed in the 2010 standards for implementation in otherwise inaccessible spaces, as outlined in Section 35.151, IV B, making them ideal for the study (Department of Justice, 2010). Questions were also modified and/or added because all buildings in this study reside on a University campus and therefore have unique spaces and uses.

For the sake of the participants' time, the audit items are limited to these three focus areas, though a more in-depth exploration in the future would be ideal. The audit is also limited to the entry level of the building, as this level should provide the most accessible features. The audit consists of 56 questions, with 32 quantifiable questions and the remaining 24 questions more qualitative in nature. Some of these qualitative questions provide background information that is relevant to the study or are prerequisites for subsequent quantitative questions. The combination of qualitative and quantitative methods allows for a broad understanding of the accessibility within each space.

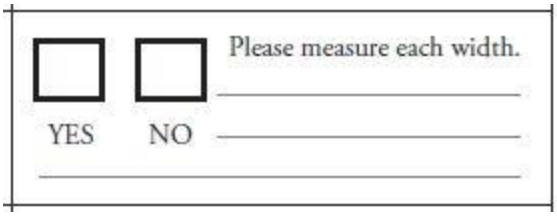


Figure 35: The typical audit question answer box. Yes or No indicates if a minimum is met or exceeded, as explained in the coding document.

Questions in the audit follow the same general format as the ADA Checklist, with the option of answering "Yes" or "No" on nearly every question. On the majority of questions, a space is left to record measurements or explain the answer provided. Each question provides clarification as to what is expected of the answer. The audit also includes two maps for the participant: one showing how to travel to their assigned building from Architecture Hall and an additional map or floor plan of the building they will audit with detailed information as to where they should measure and conduct the audit within the building. Unfortunately, these floor plans cannot exist in this paper as per University Police restrictions.

4.5 Coding of Data

Do inaccessible entrance(s) have signs indicating the location of the nearest accessible entrance?	This question is asked in order to gain baseline data for the following question and therefore is not quantifiable.	N/A	N/A	If the answer is no, indicating no signs, this would indicate non-compliance.
How many signs are provided at each inaccessible entrance to indicate the location of the nearest accessible entrance?	Yes	1 sign would be considered the minimum	Any number larger than 1 would exceed the minimum.	0 signs would indicate non-compliance.

Figure 36: Examples from the coding document. Column labels from left to right: Question, Quantifiable?, Minimum, Exceeds Minimum, Incidental.

As the "Yes" and "No" answers on the audit do not clearly indicate when a minimum is met or exceeded, a coding key was created to assist in data analysis. This tool ensures that the data cannot be interpreted in a way that could skew the data toward supporting the hypothesis for participants and/or the primary investigator. Each question is broken down into several categories. Highlighted questions indicate a quantitative answer. Additionally, this tool provides a method to report any features of audited buildings that may not comply at all, called incidental findings. Incidental findings are data points in which the specific measurement falls short of even the minimum or falls outside of the accepted window of dimensions defined in the standards. An example would be a toilet seat measuring 16" when the minimum is 17". Non-compliant items will be reported to the ADA compliance officer to ensure that the University is aware of any issues. Just because an item is incidental and therefore non-compliant, it may still be legal dependent on the building's history. While not the primary focus of this research, these incidental findings still require reporting to ensure the health, safety, and welfare of the students, faculty, and staff on this campus.

While most of the coding is straight forward to the standards, some items on the audit require additional explanation, as the rationale may not be understood at face value. One of these items is the minimum requirement for accessible restroom stalls. According to the Facilities Planning and Construction 2017 Accessibility document, 5'x 5' bathroom stalls would be

required for accessibility (Facilities Planning and Construction, 2017). For this reason, this dimension was treated as the minimum requirement for the audit.

An additional item of contention is the accessibility of elevators in the facilities. While the only space in which data collection took place was the ground floor of each building, elevators were still assessed as elevators provide the only means of accessible entrance to higher floors. Elevators must have a verbal announcement of floor level as well as visual indication, so not announcing the floor number and simply providing a dinging noise is a reason for non-compliance.

This is not to say, however, that the building is not still legally protected, as elevators can be updated periodically if they were built prior to implementation of ADA. For example, just the elevator panel can be updated to adhere if cost and other factors prevent refurbishing or replacing the entire elevator. In this way, non-accessible elevators are able to legally comply to code; a contradiction of civil rights and ethics that continues to occur in disputes of compliance.

4.6 Survey Development

In addition to the accessibility audits for each building, a survey was utilized to comprehend participant understanding of ADA in general and of accessibility issues on campus. The participants were only given information regarding definitions of accessibility terms and how to site measure prior to participating in the study, so the survey seeks to understand how much students know about these issues on campus and how they feel after completing the data

12. I believe students all have a right to equally access buildings on campus.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I believe the University should make reasonable accommodations for students with disabilities.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Figure 37: Examples of questions on the survey and the use of a Likert scale.

collection. Twenty questions were included in the survey discussing a range of topics.

In addition to the general questions, several questions were asked to determine how accessible each of the participants believes the campus truly is. Most questions utilize a Likert scale ranging from “Strongly Agree” to “Strongly Disagree while a small minority of questions ask for an explanation or for participants to indicate common accessible accommodations on campus through a list.

5. Data Analysis

5.1 Quantitative Analysis

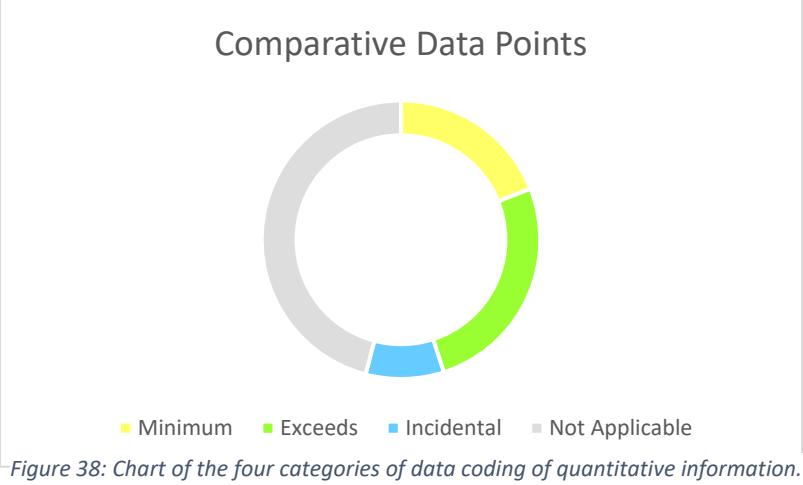


Figure 38: Chart of the four categories of data coding of quantitative information.

Using the coding key document, each audit question was recorded in an excel file under one of four categories: minimum, exceeds minimum, incidental, and not applicable. A total of over 500 data points comprised these columns, as shown broken down by category in Figure 38. In purely comparing the totals of minimums met versus minimums exceeded, a total of 109 data points met the minimum while a total of 149 data points exceeded. However, the additional column of incidental findings adds another component of analysis. These incidental findings include any items which were found to be in non-compliance by the standards. The requirements for falling under the incidental

category were also listed in the coding document with specific measurements and ranges (Appendix K).

Figure 39: Three main categories of data points. Points determined Not Applicable were not included in analysis of the data set. Created with Google Slides.

Though the original intent of the incidental column was to record what the primary investigator believed would be uncommon occurrences of non-compliance, the incidental findings column ended far more populated than anticipated. 52 data points fell into the incidental category. This number was quite surprising and could not be ignored. Incidental findings were

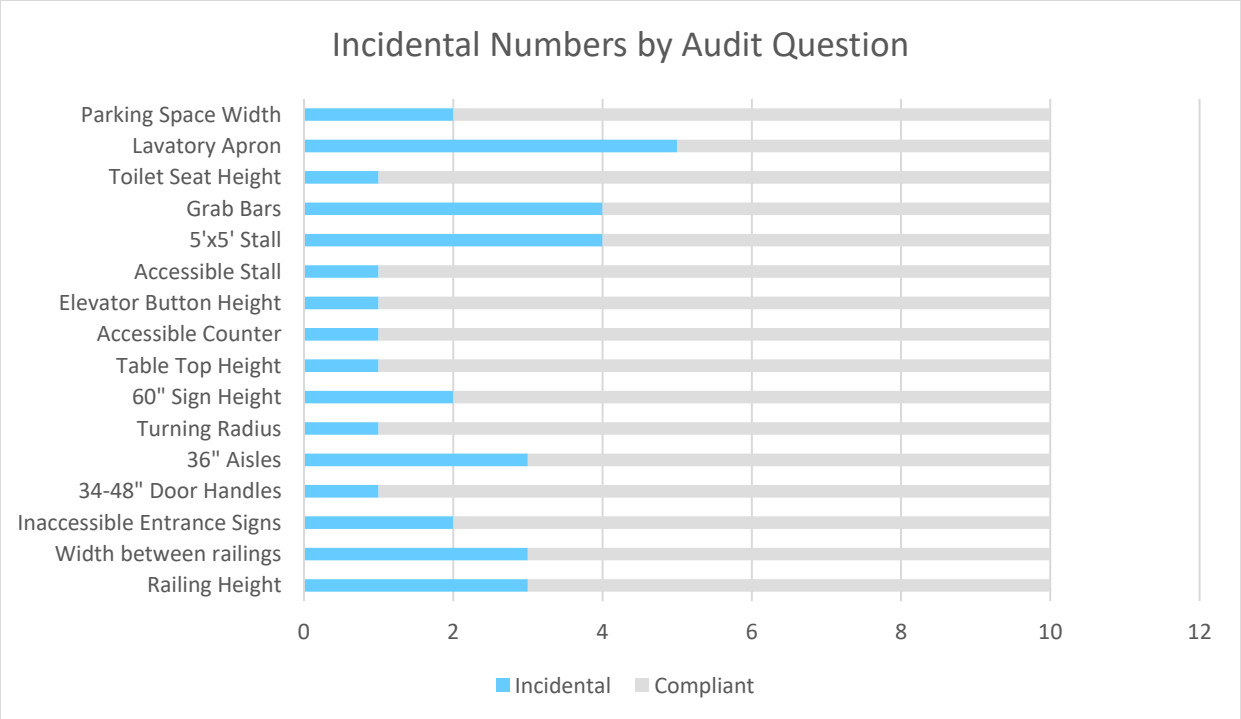


Figure 40: Visual representation of incidental findings by question and numerically compared across buildings.

found in 16 different questions on the audit, with some singular building findings and others with

many of the buildings incidental. As these items indicate a failure to meet even the minimums of the standards, they were also calculated in addition to the total of minimums met for comparison with the exceeds minimum category. When this new total was compared to the exceeds minimum category, the numbers tell a different story, as the minimum/incidental category outnumbers the exceeds minimum category. A breakdown of this new comparison is shown in Figure 41.

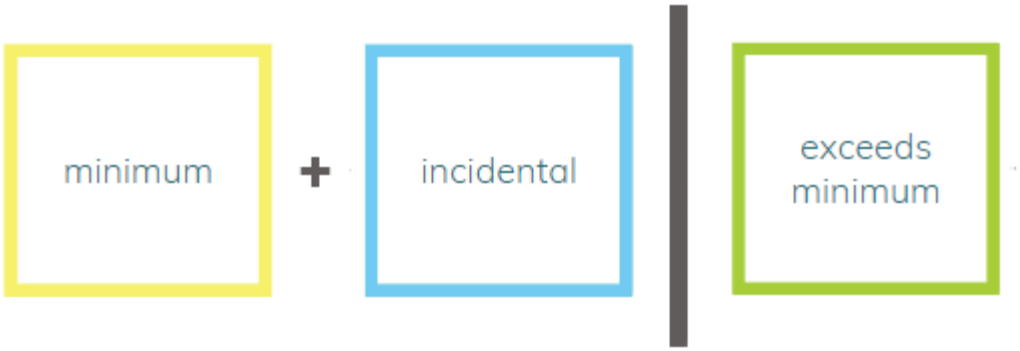


Figure 41: The minimum and incidental categories were added together to compare to the exceeds minimum category for final analysis.

It was surprising to see such a balance between the three categories of measure across buildings, as only one building had more minimums met but not exceeded than minimums

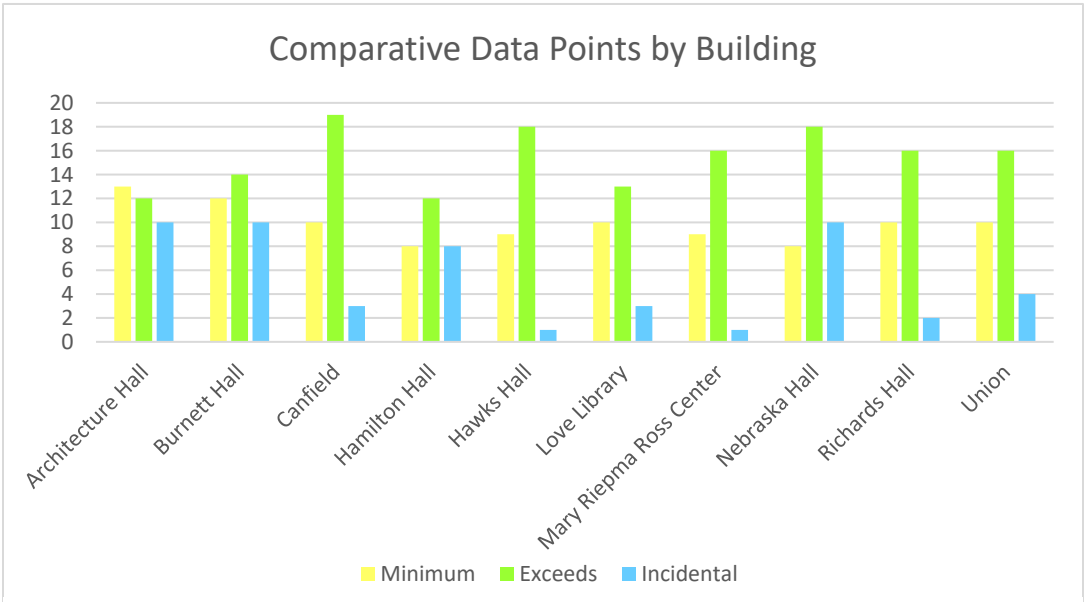


Figure 42: Categories of data separated by building, comparing minimum, exceeds minimum, and incidental by number of data points. For example, Architecture Hall had 13 minimum data points, 12 exceeds minimum, and 10 incidentals.

exceeded and incidentals (Architecture Hall). A table of this data by building is available in Figure 42.

The following pages display the same information as Figure 40 broken down by question. Only quantitative questions were included in this table.

Quantitative Data Points

Color indicates meets minimum, exceeds minimum or incidental. No color indicates that the question was not applicable for the particular building.

Meets Minimum | Exceeds Minimum | Incidental

Question	Architecture Hall	Burnett Hall	Canfield Administration	Hamilton Hall	Hawks Hall	Love Library	Mary Riepma Ross Center	Nebraska Hall	Richards Hall	Union
How many of these entrances (if any) do not require the use of stairs?										
Of these entrances that do not require stairs (also called an accessible entrance), is the route of approach at least 36 inches wide?										
Do these railings measure between 34 and 38 inches high?										
Is the width between railings at least 36 inches?										
How many accessible parking spaces are in this lot?										
How wide are the parking spaces?										
How many signs are provided at each inaccessible entrance to indicate the location of the nearest accessible entrance?										
At each accessible entrance, does the entrance door have at least a 32-inch clear opening? A double door with a jamb in the middle is measured from one side to the jamb.										
At each accessible entrance, is there at least 18 inches of clear, unobstructed wall space on the pull side of the door next to the handle?										

Quantitative Data Points

Color indicates meets minimum, exceeds minimum or incidental. No color indicates that the question was not applicable for the particular building.

Meets Minimum | Exceeds Minimum | Incidental

Question	Architecture Hall	Burnett Hall	Canfield Administration	Hamilton Hall	Hawks Hall	Love Library	Mary Riepma Ross Center	Nebraska Hall	Richards Hall	Union
Is the accessible route to all public spaces at least 36 inches wide?										
Locate the main office as indicated on the map. Is the doorway into the space at least 32 inches wide?										
On the pull side of doors, next to the handle, is there at least 18 inches of clear wall space?										
Are door handles between 34 and 48 inches high?										
Are aisles and pathways in these spaces at least 36 inches wide?										
Is there a 60-inch diameter circle or T-shaped space for turning a wheelchair completely?										
Are signs in designated spaces at least 60 inches above the floor?										
Are all light switches and outlets in the highlighted areas at an accessible height? The height range for an accessible control is between 9 and 54 inches.										
Are the tops of tables or counters between 28 and 34 inches high?										
In the office/lobby area as indicated on the map, is there a portion of the main counter that is no more than 36 inches high?										

Quantitative Data Points

Color indicates meets minimum, exceeds minimum or incidental. No color indicates that the question was not applicable for the particular building.

Meets Minimum | Exceeds Minimum | Incidental

Question	Architecture Hall	Burnett Hall	Canfield Administration	Hamilton Hall	Hawks Hall	Love Library	Mary Riepma Ross Center	Nebraska Hall	Richards Hall	Union
Are the call buttons for elevator(s) no higher than 42 inches?										
Is there at least one drinking fountain with clear floor space of at least 30 by 48 inches in front?										
Is there at least one drinking fountain spout measuring no more than 36 inches from the ground and another measuring between 38 and 43 inches?										
Is at least one restroom fully accessible? Fully accessible could describe a separate room designated as handicapped or an accessible stall in a larger restroom.										
Is the doorway to access the restroom at least 32 inches clear?										
Is there a 36-inch wide path to all fixtures in the restroom?										
How many wheelchair accessible stalls are there in this restroom?										
Is there a wheelchair accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing?										
In the accessible stall(s), are there grab bars behind the toilet and on the side wall?										

Quantitative Data Points

Color indicates meets minimum, exceeds minimum or incidental. No color indicates that the question was not applicable for the particular building.

Meets Minimum | Exceeds Minimum | Incidental

Question	Architecture Hall	Burnett Hall	Canfield Administration	Hamilton Hall	Hawks Hall	Love Library	Mary Riepma Ross Center	Nebraska Hall	Richards Hall	Union
Does the toilet seat measure between 17 and 19 inches from the ground?										
Does at least one lavatory (sink) have a 30-inch wide by 48-inch deep clear space in front of it?										
Is the lavatory rim no higher than 34 inches?										
Is there at least 29 inches from the floor to the bottom of the lavatory apron? The lavatory apron is defined as the bottom of the sink basin that protrudes out and could interfere with a wheelchair rolling under.										

Though the quantitative analysis would determine the outcome of the hypothesis, the qualitative data and analysis provide additional insight into the accessibility of each building that would not have been possible without the mixed-method approach.

5.2 Qualitative Analysis

Elements of qualitative analysis were primarily determined from the 24 questions on the audit that did not have a corresponding minimum or exceeds minimum solution. Figure 41 provides a list of these questions. Each building is discussed in terms of elements that were of particular interest. These sometimes combine qualitative and quantitative characteristics. Where warranted, some comparison between buildings is included throughout.

Qualitative Questions from Audit

Is there a route of travel into the building that does not require the use of stairs?	In the aisles and pathways as measured previously, are all obstacles cane-detectable? Cane detectable clearances are no more than 27 inches to the floor, or higher than 80 inches to the floor, protruding less than 4 inches from the wall?
How many entrance doors exist in this building from the ground level? A double door counts as one entrance.	Are signs mounted on the wall adjacent to the latch side of the door?
Are there railings along any of the accessible entrances?	Are lighting controls operable with a closed fist?
Is there a parking lot that services this building? Parking lots needing assessment are indicated on the map on the last page.	Are there spaces for wheelchair seating?
How many total parking spaces are in this lot?	If the answer to the last question was yes, are these seats distributed throughout the space?
Are the accessible spaces closest to the accessible entrance?	Do stair treads have a non-slip surface? Non-slip is defined as designed to reduce or prevent slipping.
If there are stairs at the main entrance, is there also a ramp or lift at the same entrance?	Do stairs have continuous rails on both sides, with extensions beyond the top and bottom stairs?
Is the accessible entrance a service entrance? A service entrance is defined as an entrance not intended for use by the general public, but for deliveries and/or removal of waste.	If the building has elevators (indicated on your map), are there both visible and audible door opening/closing and floor indicators in the elevator(s)?
Do inaccessible entrance(s) have signs indicating the location of the nearest accessible entrance?	Are water fountain controls operable with a closed fist?
Is the door handle operable with a closed fist?	Are there signs at inaccessible restrooms that give directions to accessible ones?
Are all public spaces (as included in the map) on an accessible route of travel? Accessible route is defined as a continuous, unobstructed path connecting all accessible spaces.	Are there signs on the latch side of the door to identify restrooms?
Is there carpeting in these spaces? If yes, carpet low-pile, tightly woven, and securely attached along edges?	Are the stall doors operable with a closed fist, inside and out?

Figure 43: Table of qualitative questions from the audit.

5.2.1 Architecture Hall

In Architecture Hall, accessible entrances only exist in what is called the “link,” or the space that connects the original Architecture building (East) to the College of Law building that is now known as Architecture Hall West. Minimum signage indicates the entrances to these spaces and while adequate approach is

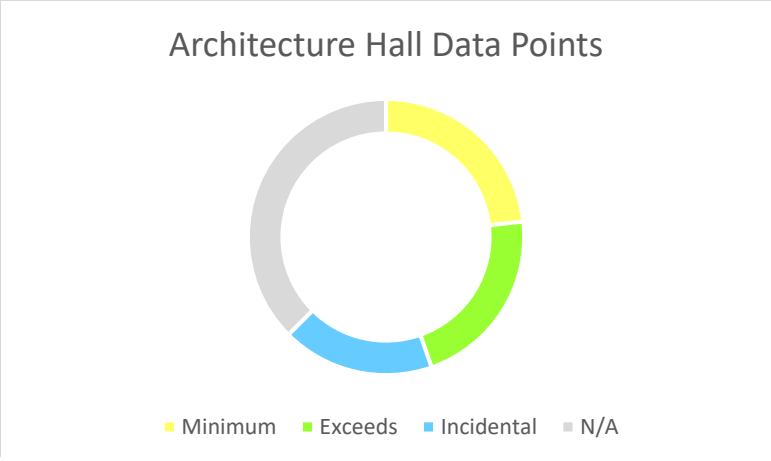


Figure 44: Data points by building. 13:12:10:21.

available for the doors, as they are all double doors, the hinge side of the doors is flush with protruding building elements which limit accessibility when users are entering and exiting the building simultaneously. Signage is seriously lacking and in the wrong location for accessibility.

The parking lot to the south of the building contains accessible parking spaces, though they are not in closest proximity to the accessible route of travel to the building. The only usable elevator exists within the link and it is the only means by which a wheelchair user could reach the Dean's office or staff offices located on higher floors. There are entire sections of the building that a wheelchair user either could not reach at all or would have to travel a great horizontal distance to travel up or down a floor. This building, both qualitatively and quantitatively, seems to be the worst building of the 10 in terms of accessibility.

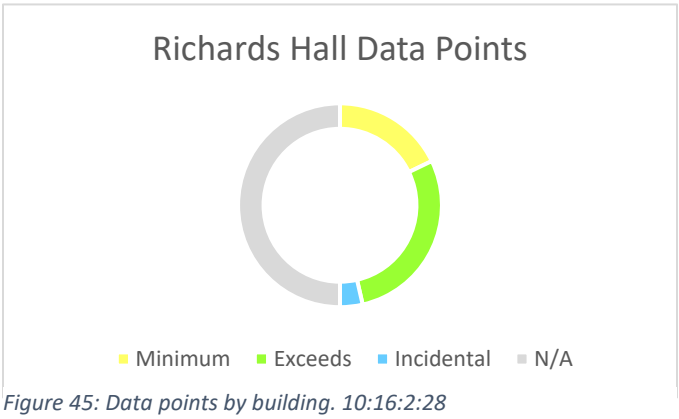


Figure 45: Data points by building. 10:16:2:28

5.2.2 Richards Hall

Richards Hall, though one of the older buildings, provided naturally accessible entrances to the building at the North and South main entrances. It provides a great example of how universal design can be integrated into the design of a building years after its initial construction and still appear seamless. Most paths within the building offer plenty of space, though some hallways narrow to

36”, which could restrict access for some. Within classrooms, which in this building are primarily art studios, clear spaces become obstructed with supplies and equipment, but the overall design provides for access. Tables in the spaces also allow for wheelchair users to use the space equitably.

Stairs in the space do not provide a slip-resistant surface and the elevator fails to provide an audible floor indicator. Similar to the restroom in Love Library, the one accessible stall provides more than the minimum clear space and a door swing in the same direction as the other stalls.

5.2.3 Union

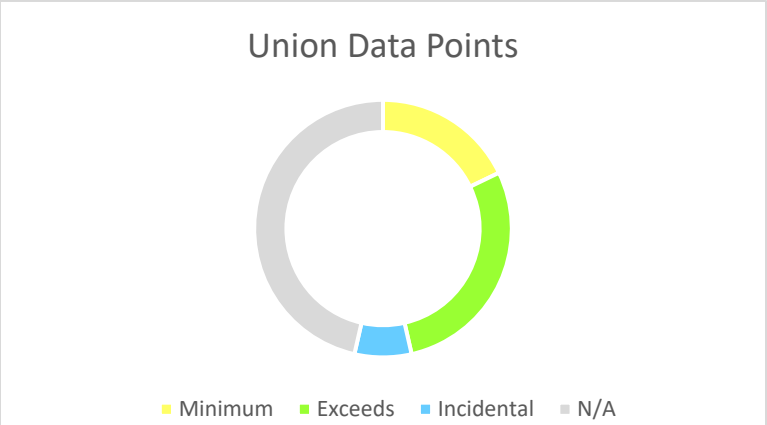


Figure 46: Data points by building. 10:16:4:26

Though the Union was constructed 80 years ago, renovations as recent as last year have significantly improved many areas of the building that are open to the largest population of public users. There are still, however, areas within the building that fall short. On the west side of the building, a designated parking lot for handicapped users is in very close proximity to the adjacent ramp. The railings on the ramp fail to comply with accessibility standards but the ramp provides adequate clear width for many users. While most entrances to the building have accessible options nearby, the main south entrance does not have an accessible entry to the main door. This is not an issue of compliance, rather an issue of equality. Forcing users who require the ramp to go to a separate entrance that

puts them in a separate part of the building does not provide equal opportunity or equity of experience.

Additionally, the participant researcher was unable to locate signs indicating the locations of accessible entrances from inaccessible entrances. An example of such a sign is shown in Figure 47.

Figure 47: Symbol used on campus to indicate the location of an accessible entrance from an inaccessible entrance. Photograph. Retrieved from: https://www.amazon.com/Handicap-Access-Sticker-Window-Decal/dp/B0075VU64M

On the North side of the building, however, ramps are seamlessly integrated into the design of the entrance. Within the measured areas of the Union, some door handles easily fell within the acceptable range of control height while older doors failed to meet the minimum. Language within the legislation allows for these discrepancies, as it could have been determined to be "unreasonable" due to cost or may be a part of a future implementation plan. Cost drives many of the changes that the University can or cannot make to improve the accessibility of the facilities.

Similar to the Library, seating for wheelchair users in the Union is integrated into other seating and is not extremely obvious. Lounge areas in the north west portion of the building would require most wheelchair users to move a chair in order to use the table space but circulation paths are wide enough that this would not interfere in the typical

Figure 48: Updated lavatories add excellent universal design to the Union restrooms. Photograph. Retrieved from: https://news.unl.edu/newsrooms/today/article/summer-construction-new-buildings-and-updates/

traffic flow of students. The participant researcher indicated that there were not designated wheelchair options throughout the space.

Stairs only have two small strips of slip-resistant surface and the elevator lacks an audible floor indicator. The newly renovated restroom features universal design elements in the lavatories that allow users to approach any of the many sinks in a wheelchair. The faucet controls, as shown in Figure 43, combine the soap, water, and hand dryer in a single all-in-one feature. Despite a very large quantity of bathroom stalls, still only one stall met the requirements for an accessible stall and some minimum elements still remained.

5.2.4 Burnett Hall

Burnett Hall remains untouched after many years, so it is no surprise to see the number of minimums just met and incidental findings. Inaccessible entries had the minimum signage and the ramps at the accessibly entrances were far below minimum standards. Additionally, only one railing was provided when there should be two.

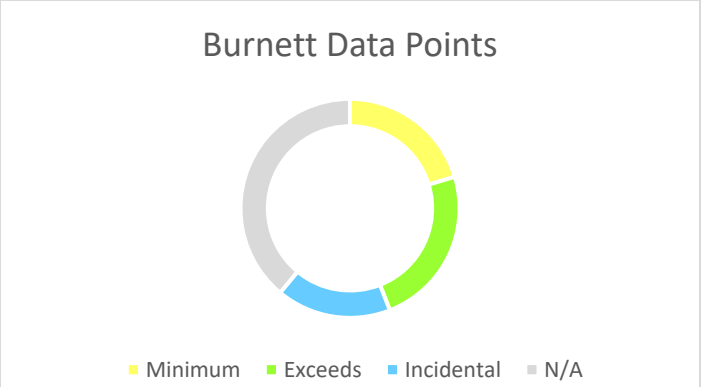


Figure 49: Data points by building. 12:14:10:23

Within the building, some classrooms have a few accessible seats while others in the same building have no accessible seats. The primary investigator witnessed a wheelchair-bound student wait on her desk to arrive for class and then miss class for an entire week due to elevator maintenance. Her accessible desk, while helpful, was moved around to inaccessible areas of the room and other desks obstructed the path, creating unnecessary work each class period.

Stairs in this building do not have any non-slip surfaces, making it easy for someone to slip and fall, especially after cleaning or during the winter months with snow and slush coming into the building. Stairs also do not have a continuous rail on all sides that exceeds the last tread. In all buildings at least one restroom was accessible.

In the measured spaces, the only building to provide an additional accessible stall/room outside the minimum was Hawks Hall, the newest of construction of the buildings measured. This extension beyond the minimum was a relief to see and points toward progress in improving accessibility.

5.2.5 Canfield Administration

While Canfield exceeds number of accessible entrances, it faces the same issue as the Union; the approach is in the same area as the main entrance, but the ramp does lead to a different entrance than the stairs. Based on the placement of this accessible door and interior at the entrance, it seems to have been added after initial construction. Though an older building, this building does seem to have many accessibilities upgrades due to the Services for Students with Disabilities office (SSD) taking residence in this building.

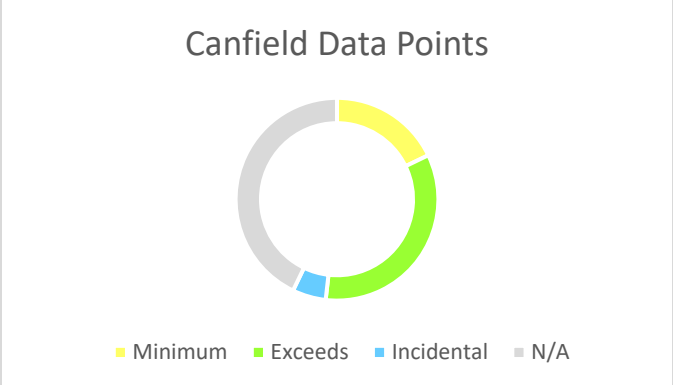


Figure 50: Data points by building. 10:19:3:24

In finding signage indicating accessible entrances into the building, the participant was unable to locate any such signs. While several signs do exist around this building, they only adhere to the minimum of requiring one sign at each inaccessible entrance to provide direction to accessible entrances. Though there isn't necessarily

a size requirement on these signs and being discrete is nice, if students aren't able to easily find these signs to indicate accessible entrances, it could hinder their access to such buildings.

Many doors in buildings such as Canfield, Burnett, Hamilton, and Nebraska Hall had recessed doors off of the hallways into classrooms and other offices. As most of these recesses measured less than 8" deep, clear space on the pull side of the door (as described on page 5 of the audits, Appendix J and Figure 51) can be offset from this recess. In the event that recesses are 8" or deeper, the recessed space must be measured to indicate whether or not 18" of clear space exists for easy operation of door handles from a wheelchair.

Of staircases that did have a non-slip surface, many simply had two stripes of non-slip surface at the front end of the tread, as exemplified in Figure 52. While these strips do provide resistance against slipping, they can wear easily and do not provide the best slip resistance. Stairs with a rubberized tread surface throughout are much more effective at providing a non-slip barrier.

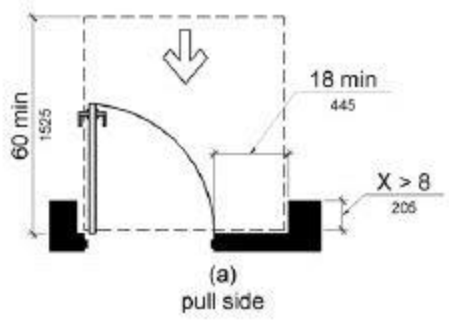


Figure 51: Minimum accessible clearance for recessed doors deeper than 8 inches. Diagram. Retrieved from: http://ada.gov

Within Canfield, one small restroom was found for measurement on the ground level and it was concealed behind a small hallway with no signs indicating its location. One sign was provided in a separate section of the building to indicate its general direction, but wayfinding stopped off the main hallway in which the restroom was located. Additionally, the smallest of the hallways in

*Figure 52: Example of non-slip strips added/integrated to a typical stair surface like terrazzo. While this example shows three strips, buildings on campus only have two. Photograph. Retrieved from: http://terrazzco.com/treads-risers/?utm_content=buffer90345&utm_*

this building occurred immediately outside the only accessible restroom, measuring just 36". While 36" would exceed the minimum for a door clearance, it is a rather small width for a hallway, especially for access to a handicapped restroom.

5.2.6 Love Library North

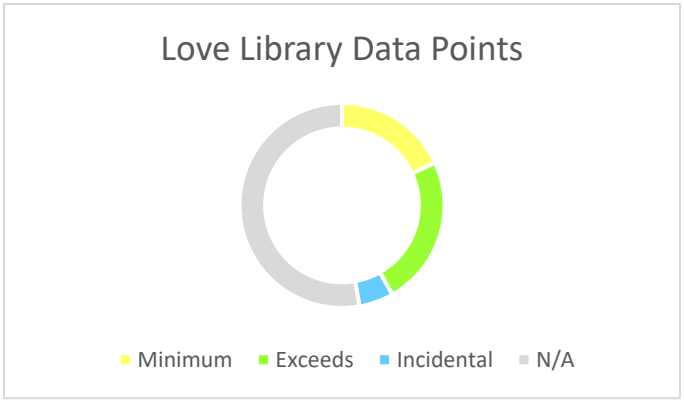


Figure 53: Data points by building. 10:13:3:29

Love Library North, also known as the Adele Coryell Learning Commons, is a very accessible space, as all entrances are on-grade and circulation paths throughout the public spaces are quite wide. The study rooms, however, are not accessible. There are a few larger options for students in wheelchairs, though specific room reservations fill quickly. Within the open spaces, many of the seating options do not provide surfaces at a wheelchair accessible height, so finding seating for those in wheelchairs could be difficult. The primary investigator answered this prompt on the audit saying that there were wheelchair seating options, though the participant researcher indicated that there were not designated seating areas for those in wheelchairs.

This is a point of contention for many among discussions of Universal Design, as accessible options should be provided seamlessly throughout the space to provide equity, but if students cannot easily identify those areas, their use of the space could be limited. Issues like these are what restrict the movement forward in changing the legislation and deciding how best to design spaces. The approach at this point seems to be just barely enough required with a fear of over-regulation that incapacitates improvement.

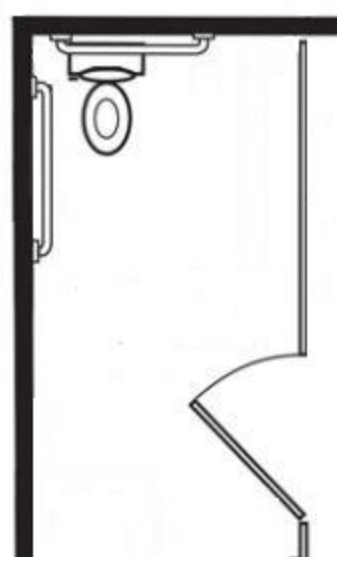


Figure 54: Example of a restroom stall in which the door swing goes into the stall and does not interfere with the clear space. This large of stall should exist in all restrooms. Diagram. From "Large Public Restrooms: ADA Guidelines." Lederman Gary. 2016.

Within the restroom of Love Library, handles do not open easily with a closed fist and only one accessible stall was provided, as was the case for the majority of buildings assessed. With so many stalls in each of these restrooms, it was quite disappointing to see this minimum consistently met and not exceeded. The one accessible stall, however, was one of the largest on campus, as it spanned the entire width of the restroom at its rear to allow the door swing to enter into the stall and still provide plenty of transfer space. A diagram of this restroom can be found in Figure 54.

5.2.7 Nebraska Hall

In Nebraska Hall, while the ramp approach is near the main student entrance, it leads to a different door off the main lobby. Additionally, signs indicating accessible entrances were not visible from the exterior of the building. The doors in this building are recessed similar to Hamilton Hall but provide adequate room for approach. Some pathways within the classrooms are quite narrow, though a main circulation path to the front of the classroom existed no matter if the entrance was at the front or farther to the back of the room. Several of the classrooms provided chairs and tables for student seating which would easily accommodate a wheelchair student in almost any row while others had free-standing desks with no designated wheelchair seating.

Stair treads in this building do not have any sort of slip-resistant surface applied and though there is one elevator with accessible controls, the freight elevator at the lobby of the building has controls at 55" above the floor, which is more than one foot higher than the required accessible height. According to the ADA Design Standards, all elevators, even freight elevators,

must comply if located within a public building (Department of Justice, 2010). Due to the age of the building and few renovations that have taken place since the University's acquisition of the building in 1958, the elevator legally has not had to comply to the standards. On the elevator with accessible controls, audible floor indicators are missing. Wayfinding is also a serious concern in this building, as both the primary investigator and participant had difficulty locating particular elements of the building even with a floor plan. Restroom signs were scarce and far between.

Within the dated restroom, stall doors were difficult to open with a closed fist and the stall that was designated as accessible fell short of the minimum space requirements. There were grab bars on either side of the water closet but no bar behind and the bars connected from the wall behind to the floor. The fixture also fell short of the minimum height requirement. Figures

Figure 55: "Accessible" stall in Nebraska Hall with multiple incidental features, including the grab bars, door handles, and seat height. Drummy, Emily. Photograph.

Figure 56: Truly accessible restroom in Hawks Hall. Hawks was the only building to exceed the minimum accessible stall requirement. Drummy, Emily. Photograph.

55 and 56 show a side by side comparison of what is deemed the worst restroom stall and the best restroom stall from the data collected.

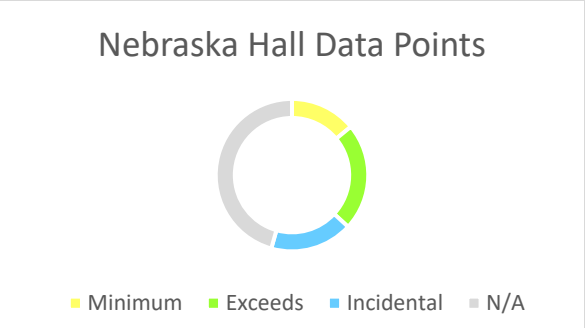


Figure 57: Data points by building. 8:13:10:26

5.2.8 Hamilton Hall

In Hamilton, almost all doors could be determined inaccessible because they are all door knobs and not handles. Knobs are not operable with a closed fist and are therefore difficult to open for those with mobility impairments. This is a relatively low-cost update that should have been done already, though the first floor is relatively untouched compared to the higher floors. Hamilton Hall was, however, one of the only buildings with audible floor indicators in the elevators. It was nice to see a compliant feature that few other buildings succeeded in meeting.

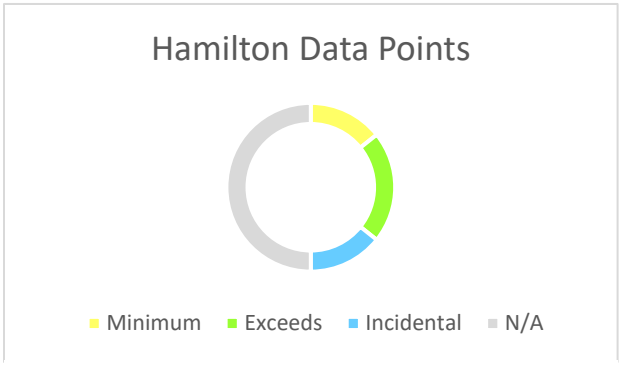


Figure 58: Data points by building. 8:12:8:28

Within the restroom in this building, there is a clear path to all fixtures along the original plan for the room, but the addition of towel dispensers obstructs the clear path at a height that would not be cane detectable. This is an example of how retro-fitting a restroom with modern conveniences can interfere with the general accessibility of the space. As this is an older building, it also had very unusual grab bars in the accessible stall and barely any transfer space. It does not meet even the smaller acceptable requirements for an accessible stall, so it is surprising that it has not been updated yet. The stall doors were also not operable with a closed fist in this building, further hindering access to the stalls.

With millions and millions in updates to the facility in the last twenty years, it is disappointing that the most accessible level of the building lacks the most basic accessible features and legally this is not an issue.

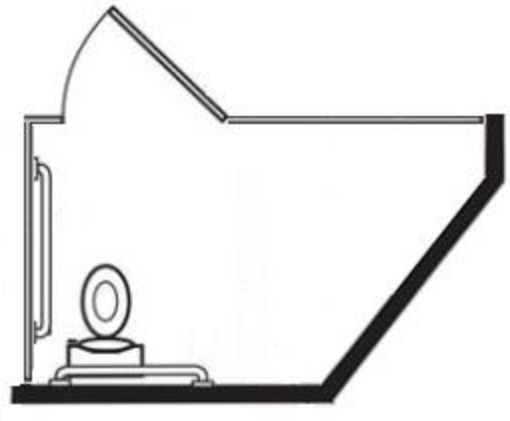


Figure 59: Diagram of restroom in Ross Media Arts Center. Using the architecture of the building, the stall exceeds minimum clear space.

5.2.9 Mary Riepma Ross Media Arts Center

In the Mary Riepma Ross Media Arts Center, the recent construction should have provided many improvements on accessibility. The only classroom spaces in this building are large lecture halls, which only provide accessible seating at the very bottom of the lecture hall. Similar to other restrooms, the handles on the stall were difficult to operate with a closed fist, though the accessible stall expanded upon the 5'x5' footprint with the architecture of the space as shown in Figure 59.

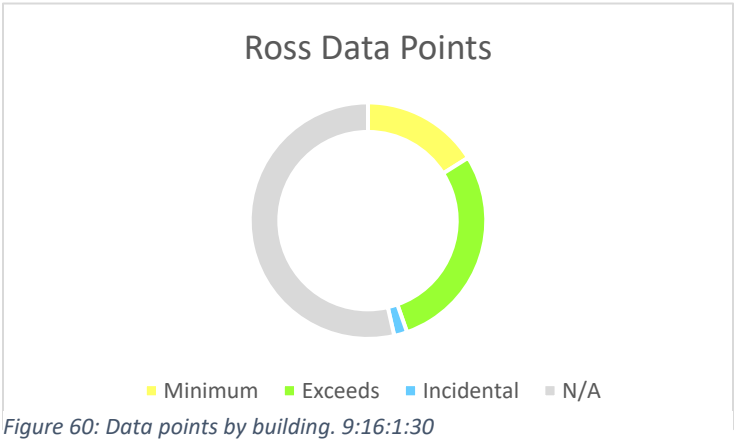


Figure 60: Data points by building. 9:16:1:30

5.2.10 Hawks Hall

Hawks Hall, as the newest academic building on campus, was expected to be the most compliant and use the fewest minimums within the building, as the University's policy ensuring universal access went into effect prior to the completion date. Prominent features of exceeding minimums in this building include accessible options at all entrances as well as extra accessible stalls in the restrooms. Hallways are very wide and within classrooms, ramps exist so students in wheelchairs can sit wherever they would like within the room, provided that the movable

furniture in the space is not in the way. While most pathways were 36” clear as originally constructed, in observing a classroom with tables moved and chairs strewn about from constant comings and goings of students, it would be difficult for students in wheelchairs to navigate to the side of the room opposite of the ramp.

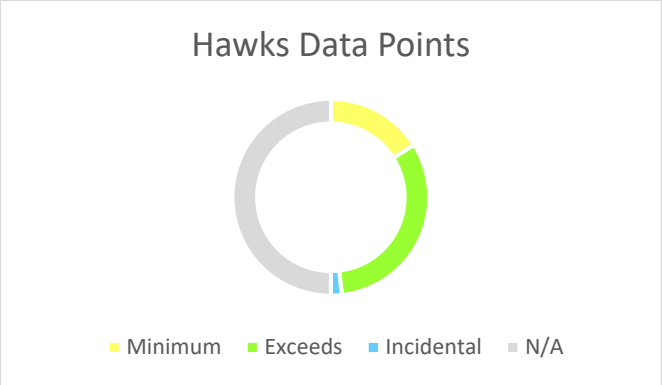


Figure 10: Data points by building. 9:18:1:28

Of the few minimum features within Hawks Hall, water fountains were one, with minimum number of provided accessible versus non-accessible fountains. The stairs also only provided two small strips of non-slip surface along the front of the stair treads, which provide an aesthetically pleasing stair but could become slippery. Back staircases for emergency exit did provide a rubberized surface on all stair treads, and while it is great to have this alternative, it does not provide the same user experience as the main stairs. The purpose of most Universal Design principles is to provide equal access to all and equal opportunity. Keeping features like this to the back-of-house areas of the building does not do much to provide equity.

Additionally, while there were multiple accessible bathrooms, the bathrooms themselves contained the most minimum features, including stall size, fixture sizes, and placements. The detached and separate accessible restroom did provide extra clearance space, but the accessible stall within the regular restroom generally adhered to just at the minimums. A welcomed addition to the Hawks Hall restrooms was the integration of automation on the restroom doors. With operations from both sides, all people can open the door quite effortlessly to use the restroom facilities.

5.3 Comparative Analysis

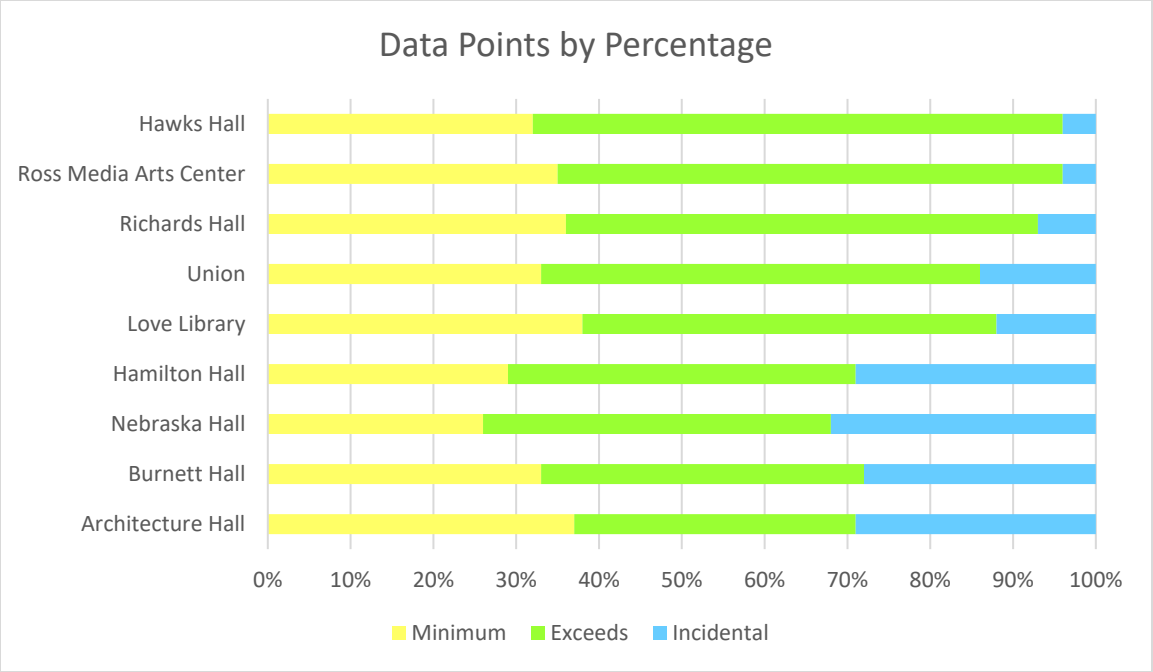


Figure 62: Comparison of percentages across data points for each building.

In analyzing the data both qualitatively and quantitatively, several trends arose among the data across buildings and across particular questions. The trends in incidental question patterns are discussed in an earlier chapter. To determine the overall accessibility of each space, the three categories of minimum, exceeds, and incidental were calculated as a percentage of the total data collection points for the particular building (Figure 62). As each building had a different total, an analysis by all 56 data collection points would not show accurate results.

In the following graphic, four ranking scales show the buildings comparatively:

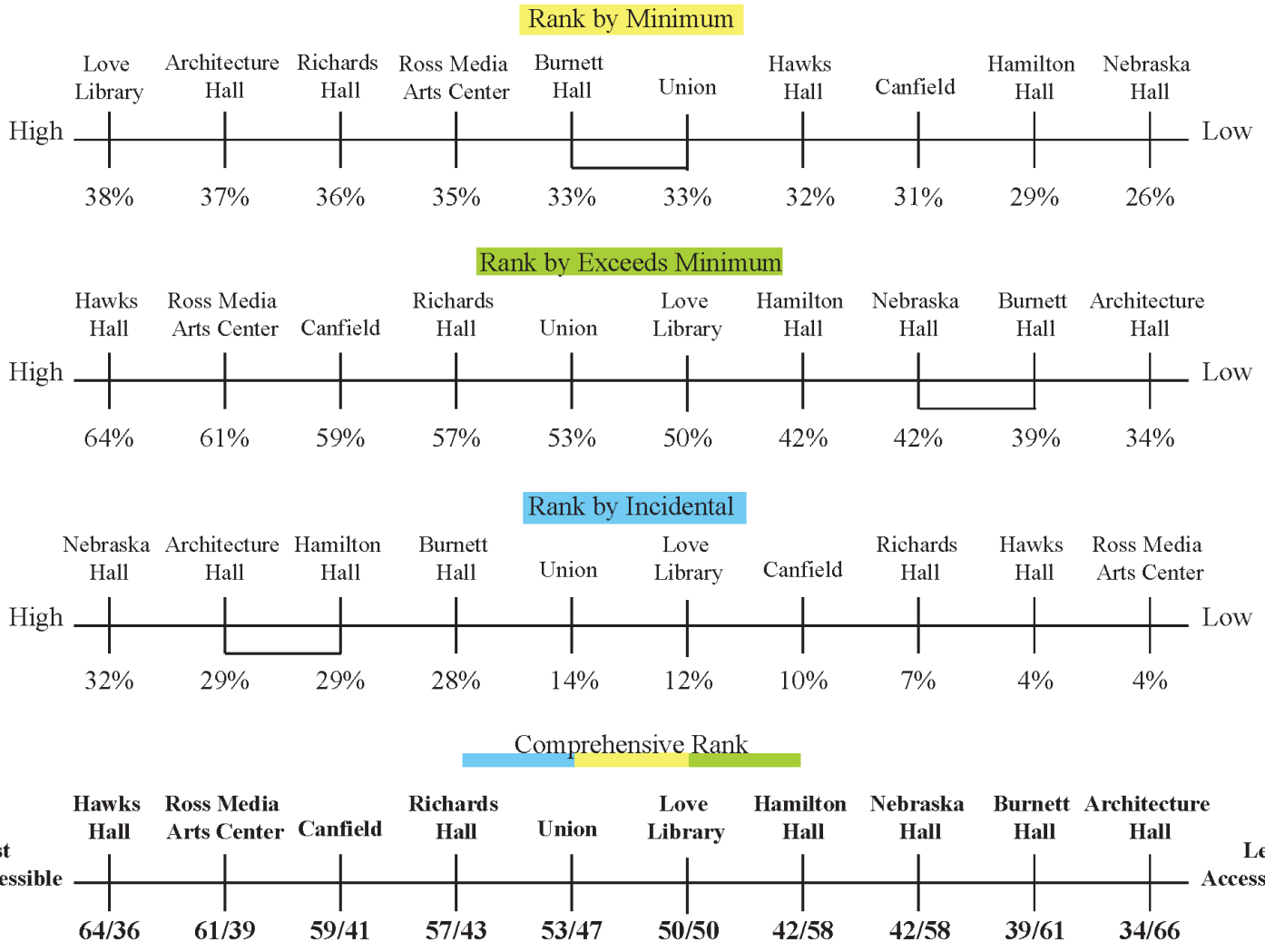
1. Percentage of minimums (high to low)
2. Percentage of exceeds minimum (high to low)
3. Percentage of incidental (high to low)
4. Comprehensive comparison (most accessible to least accessible)

The last category combines the minimum and incidental categories to compare against the exceeds minimum category. The larger the exceeds percentage, the more accessible the

building. In cases of equal percentages, the incidental percentage was used as an additional element of the function. Upon reviewing these figures, the trend follows that the more minimums exceeded, the more accessible a building is.

Rank of Accessibility

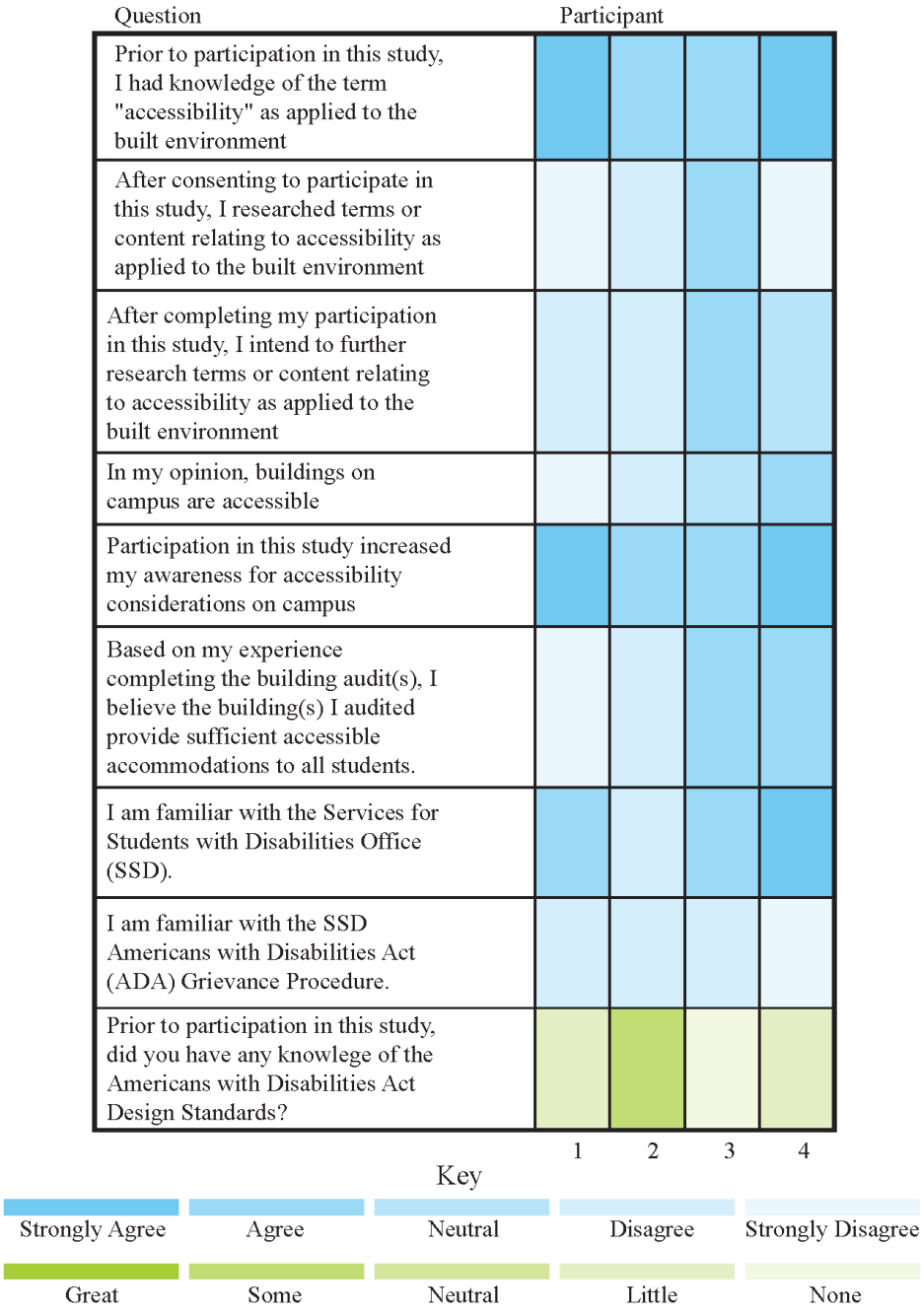
These scales display an ordered rank. The first three scales indicate a singular percentage and the fourth is a comparision.



5.4 Survey Results

Though only four participants completed the survey, making the n of the data collected too small for significant results, the survey results still provide helpful information about the design of the study, future research, and participant perceptions. Due to the small sample size, results do not accurately represent the population of UNL students, faculty, and staff.

Survey Results



Survey Results

Question	Participant			
I would like to know more information about the services offered through SSD.				
I believe students all have a right to equally access buildings on campus.				
I belive the University should make reasonable accommodations for students with disabilities.				
I belive the University does make reasonable accommodations for students with disabilities.				
I believe the building audit(s) assessed accessibility well.				
The questions on the audit were clear and easy to understand.				
The training site measuring was beneficial in completing the audit(s).				
The time spent in training and completing the audit(s) was reasonable.				
I spent more time than was expected completing the audit(s).				
I would participate in a similar research study in the future.				
	1	2	3	4

In your opinion, what accessible accommodations are common on this camus? You may check more than one option.

	Wheelchair ramps	Ground level entrances not requiring ramps or stairs	Elevators	Accessible entry at main entrance	Wheelchair Seating in classrooms	Accessible bathrooms
1						
2						
3						
4						

Key

Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree

While results are not statistically significant, several answers provide a nice insight into accessibility. Very few of the participants knew much about ADA prior to participation and all answered “agree” or “strongly agree” to being aware of accessibility issues on campus after participation. Participants strongly believe that students deserve accommodations but do not believe the University actually does make such accommodations. Comments on the question “In my opinion, buildings on campus are accessible” (Appendix L) are listed below:

1. “None of the buildings have full access”
2. “Some are accessible, however the older buildings loosely follow ADA guidelines”
3. “Most (the ones I measured) are, but only to the minimum requirements”
4. “I think many of the newer buildings are, but the old ones are not”

These answers exemplify the sentiments of the primary investigator and the reasoning behind this research. The survey was a helpful tool for the primary investigator to gather data as well as for the participants to reflect on their participation and start the debriefing.

6. Conclusions

6.1 Overview

As the fight for equality continues, a call to action to improve the ADA Standards for Accessible Design must take effect. While the standards are continually improved upon and each version has potential to enhance the built environment for all, the norm of minimum adherence remains fraught with negative implications. This norm is perpetuated by design professionals and contractors who prioritize cost or other extraneous factors over the quality of human experience, diminishing the intent of the Americans with Disabilities Act to provide equality. The purpose of this study was to measure elements of the built environment in ten different buildings on the University of Nebraska-Lincoln campus to determine the extent to which minimum ADA

Standards for Accessible Design exist. The research intent is to quantify the use of minimum standards to verify the alleged norm of minimums in ADA standards. This research seeks to contribute to other research in accessibility and add to a larger dialogue surrounding the issue of equal access and design equity.

The ten buildings were analyzed through an accessibility audit, comprised of 56 quantitative and qualitative questions, conducted by the primary investigator and four research participants. Areas of focus included egress, access to services, and restrooms. A survey also gauged participant understanding and perceptions of accessibility. Both tools provided data on the issues in accessible design and quantifiable evidence on minimum standards application.

6.2 Summary of Findings

Two divergent conclusions could come from the data depending on its interpretation. When strictly comparing the data collected on minimums met to the data of minimums exceeded, the hypothesis was not supported that minimums are met and not exceeded a majority of the time. The original study was designed to interpret the data in this sense, though an external factor prevailed much more predominantly than anticipated: incidental findings. The incidental findings category was intended to catch the occasional data point that failed to comply to even the minimum ADA standards in order to inform the University and ensure health, safety, and welfare of all users.

However, with more than fifty incidental data points, the data could not be discounted in the final calculations. As incidental findings fail to meet the minimum, they were added to the minimum category for analysis. Since the study sought to establish quantifiable evidence of shortcomings in accessible design, it made sense to add the categories together. When added, this

new minimum category outweighs the exceeds minimum category by a few data points, supporting the hypothesis that minimums are met and not exceeded a majority of the time.

6.3 Limitations

1. Compliance audit is based primarily on one measurement tool, as few others exist to reference in determining the best accessibility audit to use.
2. The request for compliance data on each building was never fulfilled, as the untimely death of the campus ADA Compliance Officer halted the request.
3. The Facilities Planning and Construction department was delayed nearly two weeks in distributing the floor plans of the selected buildings due to concerns for campus safety. The primary investigator had to make an appointment with the University Police to further explain the reasoning behind the requests and their use. As a stipulation of the agreement to provide all of the plans, they were not to be included in this document.
4. While data collection was designed to take place over a two-week period, a death in the immediate family of the primary investigator delayed participant data collection to take place two weeks following the data collection by the primary investigator.
5. Due to rescheduling for the preceding reason, participant conflicts arose and only four participants were able to complete the study. Additional participants would have added more data points to the research to strengthen the study.
6. The audit was developed broadly to cover conditions in many different types of buildings, but some of the data points proved too broad and some buildings recorded numerous “not applicable” data.
7. The hypothesis suggested a majority to be correct while a statistically significant result would have made a stronger case against the norm of minimums. With only two data

points confirming the hypothesis, statistical knowledge tells that chance could have caused these results. Future studies should involve ANOVA tests for within and between data to analyze and compare the building data collection.

6.4 Future Research

The following points discuss opportunities for future research to either expand this project or contribute to the research concept as a whole.

1. Additional participants should contribute to the data collection of the study for comparison against the primary investigator. Having at least five participants measure the same buildings as the primary investigator, rather than only one, would solidify the data points and help to account for user error that can skew the data. Additional participants could also include other types of people, such as faculty, design professionals, those with disabilities, etc.
2. Additional buildings could be studied in the audit, including the entire campus. A large-scale study of this kind would need to rely on past compliance information and also reference the future implementation/strategic plan of the University. This data could be used in determining which buildings are the most accessible in scheduling courses. Though it is difficult to predict the types of disabilities that students may have across classes, having a resource to know which are most accessible could aid staff and students to avoid compliance grievances.
3. Specific areas of focus within the audit could be honed even further, measuring additional items in restrooms or within the classroom. Specific items could be added based on building use, such as the laboratory discussed in the first chapter (Hilliard, Dunston, McGlothlin, & Duerstock, 2013).

4. Based on the results from this study, a list of suggested changes could be proposed to address specific issues on the campus, prioritized by need. Each change could be described in detail as to the purpose, the cost, labor involved, and the impact it could make on the campus based on precedent examples.
5. As this study purely studies the built environment, additional human involvement could add another dimension to the research. This could be achieved in two ways. The first is to significantly increase the scope of the survey given and to send it to more students, faculty, and staff on the campus or across different campuses as a campus climate survey. More participants would increase the significance of the data.
6. The second way to add human involvement would be to conduct oral histories of students with disabilities on campus cataloguing their experiences day to day with the built environment and understanding their experience with and perceptions of various facets of ADA.
7. An additional study could focus on the ADA grievance procedure from the Services for Students with Disabilities (SSD) office to learn how often grievances are filed, the length of the process, and provide suggestions for improvements to the system. Improvements include accessible design solutions to proactively address accessibility in contrast to the reactionary response of the grievance procedure.
8. To apply this research in a different sense, studies of this type could be used more to inform the United States Access Board of potential changes for the legislation and ways to truly create equality through design. Evidence based procedures and design are gaining momentum and must be included in the formation of the standards.

6.5 Implications for Design Standards

1. Even when encouraged to go beyond the minimum standards, societal norms dictate that minimums will only be met and not exceeded when serious consequences do not exist. This is the nature of the standards and this truth must be accepted for the problem to be realized. Whether this truth comes from ignorance or willful avoidance of ethics remains questionable.
2. The current standards fail to provide equal access and equal opportunity for those with disabilities. Loop holes and loose language allow for discriminatory design that violates the ethics of the ADA but does not legally break its standards.
3. A surprising number of features in the built environment remain non-compliant despite almost thirty years of legally binding standards. The state of these features is an insult to the disability rights community and the civil rights of these people.
4. Interior designers and Architects must strive to do better for those with disabilities. The profession is failing the people it is charged to protect through lazy design and acceptance of the standards at face value. This profession is characterized by its creativity yet creative solutions for accessible design are seriously lacking.
5. Universal Design is the way of the future. While not every single disability can be accounted for, attempting to allow all people of all abilities access to these spaces will create the best outcome possible. Proactive design is the key and working together with community members can inspire designs not possible before.
6. The call to action to better accessible design must take effect at every level of the profession, from facilities management on campuses to educators to seasoned designers. Universities must strive to be better in their design execution and maintenance. They can

achieve these goals by working side by side with aware design professionals and utilizing tools such as this audit to ensure a better environment for students.

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Appendix A – IRB Certificate of Exemption

University of Nebraska Lincoln

Official Approval Letter for IRB project #18094 - New Project Form

February 23, 2018

Emily Drummy
College of Architecture
405 Fletcher Ave Apt 4 Lincoln, NE 68521

Lindsey Bahe
College of Architecture
ARCW 231, UNL, 685880107

IRB Number: 20180218094EX
Project ID: 18094
Project Title: Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus

Dear Emily:

This letter is to officially notify you of the certification of exemption of your project for the Protection of Human Subjects. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as exempt. Exempt categories are listed within HRPP Policy #4.001: Exempt Research available at: http://research.unl.edu/researchcompliance/policies-procedures/.

You are authorized to implement this study as of the Date of Final Exemption: 2/23/2018

o Review conducted using exempt category 2 at 45 CFR 46.101
o Funding: N/A

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

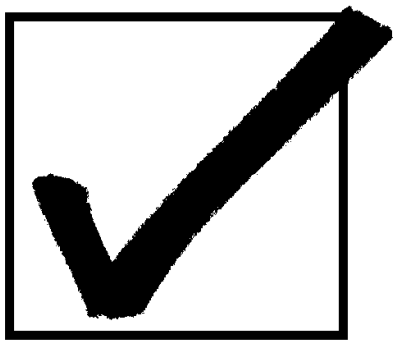
Becky R. Freeman

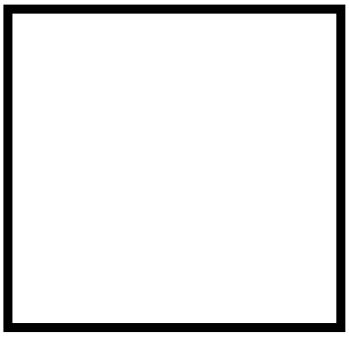
Becky R. Freeman, CIP
for the IRB

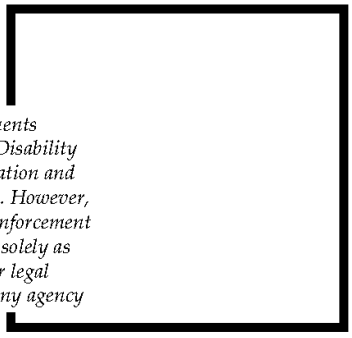
Full Accreditation

Appendix B – ADA Checklist for Readily Achievable Barrier Removal

Checklist for Existing Facilities version 2.1







ADA
TITLE III
COMPLIANCE MATERIALS

To obtain additional copies of this **checklist,** *contact your Disability and Business Technical Assistance Center. To be automaticallly connected to your regional center, call* **1-800-949-4ADA.** *This* **checklist** *may be copied as many times as desired by the Disability and Business Technical Assistance Centers for distribution to small businesses but may not be reproduced in whole or in part and sold by any other entity without written permission of Adaptive Environments, the author.*

Barrier Free Environments, Inc. and Adaptive Environments Center, Inc. are authorized by the National Institute on Disability and Rehabilitation Research (NIDRR) to develop information and materials on the Americans with Disabilities Act (ADA). However, you should be aware that NIDRR is not responsible for enforcement of the ADA. The information, presented here is intended solely as informal guidance, and is neither a determination of your legal rights or responsibilities under the Act, nor binding on any agency with enforcement responsibility under the ADA.

The Americans with Disabilities Act
Checklist for Readily Achievable Barrier Removal

August 1995

Checklist for Existing Facilities version 2.1

Introduction

Title III of the **Americans with Disabilities Act** requires public accommodations to provide goods and services to people with disabilities on an equal basis with the rest of the general public. The goal is to afford every individual the opportunity to benefit from our country's businesses and services, and to afford our businesses and services the opportunity to benefit from the patronage of all Americans.

The regulations require that architectural and communication barriers that are structural must be removed in public areas of **existing facilities** when their removal is **readily achievable**—in other words, easily accomplished and able to be carried out without much difficulty or expense. **Public accommodations** that must meet the barrier removal requirement include a broad range of establishments (both for-profit and nonprofit)—such as hotels, restaurants, theaters, museums, retail stores, private schools, banks, doctors' offices, and other places that serve the public. People who own, lease, lease out, or operate places of public accommodation in existing buildings are responsible for complying with the barrier removal requirement.

The removal of barriers can often be achieved by making simple changes to the physical environment. However, the regulations do not define exactly how much effort and expense are required for a facility to meet its obligation. This judgment must be made on a case-by-case basis, taking into consideration such factors as the size, type, and overall financial resources of the facility, and the nature and cost of the access improvements needed. These factors are described in more detail in the ADA regulations issued by the Department of Justice.

The process of determining what changes are readily achievable is not a one-time effort; access should be re-evaluated annually. Barrier removal that might be difficult to carry out now may be readily achievable later. Tax incentives are available to help absorb costs over several years.

Purpose of This Checklist

This checklist will help you identify accessibility problems and solutions in existing facilities in order to meet your obligations under the ADA.

The goal of the survey process is to plan how to make an existing facility more usable for people with disabilities. The Department of Justice (DOJ) recommends the development of an Implementation Plan, specifying what improvements you will make to remove barriers and when each solution will be carried out: "...Such a plan...could serve as evidence of a good faith effort to comply...."

Technical Requirements

This checklist details some of the requirements found in the ADA Standards for Accessible Design (Standards). The ADA Accessibility Guidelines (ADAAG), when adopted by DOJ, became the Standards. The Standards are part of the Department of Justice Title III Regulations, 28 CFR Part 36 (*Nondiscrimination on the basis of disability... Final Rule*). Section 36.304 of this regulation, which covers barrier removal, should be reviewed before this survey is conducted.

However, keep in mind that full compliance with the Standards is required only for new construction and alterations. The requirements are presented here as a guide to help you determine what may be readily achievable barrier removal for existing facilities. The Standards should be followed for all barrier removal unless doing so is not readily achievable. If complying with the Standards is not readily achievable, you may undertake a modification that does not fully comply, as long as it poses no health or safety risk.

In addition to the technical specifications, each item has a scoping provision, which can be found under Section 4.1 in the Standards. This section clarifies when access is required and what the exceptions may be.

Each state has its own regulations regarding accessibility. To ensure compliance with all codes, know your state and local codes and use the more stringent technical requirement for every modification you make; that is, the requirement that provides greater access for individuals with disabilities. The barrier removal requirement for existing facilities is new under the ADA and supersedes less stringent local or state codes.

What This Checklist is Not

This checklist does not cover all of the requirements of the Standards; therefore, it is **not** for facilities undergoing new construction or alterations. In addition, it does not attempt to illustrate all possible barriers or propose all possible barrier removal solutions. The Standards should be consulted for guidance in situations not covered here.

The Title III regulation covers more than barrier removal, but this checklist does **not** cover Title III's requirements for nondiscriminatory policies and practices and for the provision of auxiliary communication aids and services. The communication features covered are those that are **structural** in nature.

Priorities

This checklist is based on the four priorities recommended by the Title III regulations for planning readily achievable barrier removal projects:

Priority 1: Accessible **approach and entrance**
Priority 2: Access to **goods and services**
Priority 3: Access to **rest rooms**
Priority 4: Any **other measures** necessary

Note that the references to ADAAG throughout the checklist refer to the Standards for Accessible Design.

How to Use This Checklist

✓ **Get Organized:** Establish a time frame for completing the survey. Determine how many copies of the checklist you will need to survey the whole facility. Decide who will conduct the survey. It is strongly recommended that you invite two or three additional people, including people with various disabilities and accessibility expertise, to assist in identifying barriers, developing solutions for removing these barriers, and setting priorities for implementing improvements.

✓ **Obtain Floor Plans:** It is very helpful to have the building floor plans with you while you survey. If plans are not available, use graph paper to sketch the layout of all interior and exterior spaces used by your organization. Make notes on the sketch or plan while you are surveying.

✓ **Conduct the Survey:** Bring copies of this checklist, a clipboard, a pencil or pen, and a flexible steel tape measure. With three people surveying, one person numbers key items on the floor plan to match with the field notes, taken by a second person, while the third takes measurements. ***Be sure to record all dimensions!*** As a reminder, questions that require a dimension to be measured and recorded are marked with the ruler symbol.  Think about each space from the perspective of people with physical, hearing, visual, and cognitive disabilities, noting areas that need improvement.

✓ **Summarize Barriers and Solutions:** List barriers found and ideas for their removal. Consider the solutions listed beside each question, and add your own ideas. Consult with building contractors and equipment suppliers to estimate the costs for making the proposed modifications.

✓ **Make Decisions and Set Priorities:** Review the summary with decision makers and advisors. Decide which solutions will best eliminate barriers at a reasonable cost. Prioritize the items you decide upon and make a timeline for carrying them out. Where the removal of barriers is not readily achievable, you must consider whether there are **alternative methods** for providing access that *are* readily achievable.

✓ **Maintain Documentation:** Keep your survey, notes, summary, record of work completed, and plans for alternative methods on file.

✓ **Make Changes:** Implement changes as planned. Always refer directly to the Standards and your state and local codes for complete technical requirements before making any access improvement. References to the applicable sections of the Standards are listed at the beginning of each group of questions. If you need help understanding the federal, state, or local requirements, contact your Disability and Business Technical Assistance Center.

✓ **Follow Up:** Review your Implementation Plan each year to re-evaluate whether more improvements have become readily achievable.

To obtain a copy of the Title III regulations and the Standards or other technical information, call the U.S. Dept. of Justice ADA Information Line at (800) 514-0301 Voice, (202) 514-0381 TDD, or (800) 514-0383 TDD. For questions about ADAAG, contact the Architectural and Transportation Barriers Compliance Board at (800) USA-ABLE.

QUESTIONS		POSSIBLE SOLUTIONS

Priority 1

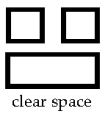
Accessible Approach/Entrance

People with disabilities should be able to arrive on the site, approach the building, and enter as freely as everyone else. At least one route of travel should be safe and accessible for everyone, including people with disabilities.

	Yes	No	
Route of Travel (ADAAG 4.3, 4.4, 4.5, 4.7) Is there a route of travel that does not require the use of stairs?	☐	☐	☐ Add a ramp if the route of travel is interrupted by stairs. ☐ Add an alternative route on level ground.
Is the route of travel stable, firm and slip-resistant?	☐	☐	☐ Repair uneven paving. ☐ Fill small bumps and breaks with beveled patches. ☐ Replace gravel with hard top.
Is the route at least 36 inches wide?	☐ ☐ ☐ width		☐ Change or move landscaping, furnishings, or other features that narrow the route of travel. ☐ Widen route.
Can all objects protruding into the circulation paths be detected by a person with a visual disability using a cane? **In order to be detected** using a cane, an object must be within 27 inches of the ground. Objects hanging or mounted overhead must be higher than 80 inches to provide clear head room. It is not necessary to remove objects that protrude less than 4 inches from the wall.	☐ ☐ ☐ distance from wall/ height		☐ Move or remove protruding objects. ☐ Add a cane-detectable base that extends to the ground. ☐ Place a cane-detectable object on the ground underneath as a warning barrier.
Do curbs on the route have curb cuts at drives, parking, and drop-offs?	☐	☐	☐ Install curb cut. ☐ Add small ramp up to curb.
Ramps (ADAAG 4.8) Are the slopes of ramps no greater than 1:12? **Slope is given as a ratio of the height to the length.** 1:12 means for every 12 inches along the base of the ramp, the height increases one inch. For a 1:12 maximum slope, **at least** one foot of ramp length is needed for each inch of height.	☐ ☐ ☐ slope		☐ Lengthen ramp to decrease slope. ☐ Relocate ramp. ☐ If available space is limited, reconfigure ramp to include switchbacks.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Ramps, continued Do all ramps longer than 6 feet have railings on both sides?	☐	☐	☐ Add railings.
 Are railings sturdy, and between 34 and 38 inches high?	☐ ☐ ☐ height		☐ Adjust height of railing if not between 30 and 38 inches. ☐ Secure handrails in fixtures.
 Is the width between railings or curbs at least 36 inches?	☐ ☐ ☐ width		☐ Relocate the railings. ☐ Widen the ramp.
Are ramps non-slip?	☐	☐	☐ Add non-slip surface material.
 Is there a 5-foot-long level landing at every 30-foot horizontal length of ramp, at the top and bottom of ramps and at switchbacks?	☐ ☐ ☐ length		☐ Remodel or relocate ramp.
 Does the ramp rise no more than 30 inches between landings?	☐ ☐ ☐ rise		☐ Remodel or relocate ramp.
Parking and Drop-Off Areas (ADAAG 4.6)  Are an adequate number of accessible parking spaces available (8 feet wide for car plus 5-foot access aisle)? For guidance in determining the appropriate number to designate, the table below gives the ADAAG requirements for new construction and alterations (for lots with more than 100 spaces, refer to ADAAG): **Total spaces** — **Accessible** 1 to 25 — 1 space 26 to 50 — 2 spaces 51 to 75 — 3 spaces 76 to 100 — 4 spaces	☐ ☐ ☐ number of accessible spaces Note widths of existing accessible spaces:		☐ Reconfigure a reasonable number of spaces by repainting stripes.
 Are 8-foot-wide spaces, with minimum 8-foot-wide access aisles, and 98 inches of vertical clearance, available for lift-equipped vans? **At least one of every 8 accessible spaces** must be van-accessible (with a minimum of one van-accessible space in all cases).	☐ ☐ ☐ width/ vertical clearance		☐ Reconfigure to provide van-accessible space(s).

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Parking and Drop-Off Areas, continued Are the access aisles part of the accessible route to the accessible entrance?	☐	☐	☐ Add curb ramps. ☐ Reconstruct sidewalk.
Are the accessible spaces closest to the accessible entrance?	☐	☐	☐ Reconfigure spaces.
Are accessible spaces marked with the International Symbol of Accessibility? Are there signs reading "Van Accessible" at van spaces?	☐	☐	☐ Add signs, placed so that they are not obstructed by cars.
Is there an enforcement procedure to ensure that accessible parking is used only by those who need it?	☐	☐	☐ Implement a policy to check periodically for violators and report them to the proper authorities.
Entrance (ADAAG 4.13, 4.14, 4.5) If there are stairs at the main entrance, is there also a ramp or lift, or is there an alternative accessible entrance? **Do not use a service entrance as the accessible entrance** unless there is no other option.	☐	☐	☐ If it is not possible to make the main entrance accessible, create a dignified alternate accessible entrance. If parking is provided, make sure there is accessible parking near all accessible entrances.
Do all inaccessible entrances have signs indicating the location of the nearest accessible entrance?	☐	☐	☐ Install signs before inaccessible entrances so that people do not have to retrace the approach.
Can the alternate accessible entrance be used independently?	☐	☐	☐ Eliminate as much as possible the need for assistance—to answer a doorbell, to operate a lift, or to put down a temporary ramp, for example.
Does the entrance door have at least 32 inches clear opening (for a double door, at least one 32-inch leaf)?	☐	☐	☐ Widen the door to 32 inches clear. ☐ If technically infeasible, widen to 31-3/8 inches minimum. ☐ Install offset (swing-clear) hinges.
Is there at least 18 inches of clear wall space on the pull side of the door, next to the handle? **A person using a wheelchair** or crutches needs this space to get close enough to open the door.	☐	☐	☐ Remove or relocate furnishings, partitions, or other obstructions. ☐ Move door. ☐ Add power-assisted or automatic door opener.



QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Entrance, continued			
Is the threshold edge 1/4-inch high or less, or if beveled edge, no more than 3/4-inch high?	☐ height	☐	☐ If there is a single step with a rise of 6 inches or less, add a short ramp. ☐ If there is a threshold greater than 3/4-inch high, remove it or modify it to be a ramp.
If provided, are carpeting or mats a maximum of 1/2-inch high?	☐ height	☐	☐ Replace or remove mats.
Are edges securely installed to minimize tripping hazards?	☐	☐	☐ Secure carpeting or mats at edges.
Is the door handle no higher than 48 inches and operable with a closed fist? **The "closed fist" test for handles and controls:** Try opening the door or operating the control using only one hand, held in a fist. If you can do it, so can a person who has limited use of his or her hands.	☐ height	☐	☐ Lower handle. ☐ Replace inaccessible knob with a lever or loop handle. ☐ Retrofit with an add-on lever extension.
Can doors be opened without too much force (exterior doors reserved; maximum is 5 lbf for *interior* doors)? **You can use an inexpensive force meter or a fish scale** to measure the force required to open a door. Attach the hook end to the doorknob or handle. Pull on the ring end until the door opens, and read off the amount of force required. If you do not have a force meter or a fish scale, you will need to judge subjectively whether the door is easy enough to open.	☐ force	☐	☐ Adjust the door closers and oil the hinges. ☐ Install power-assisted or automatic door openers. ☐ Install lighter doors.
If the door has a closer, does it take at least 3 seconds to close?	☐ seconds	☐	☐ Adjust door closer.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Priority 2 Access to Goods and Services Ideally, the layout of the building should allow people with disabilities to obtain materials or services without assistance.			
Horizontal Circulation (ADAAG 4.3) Does the accessible entrance provide direct access to the main floor, lobby, or elevator?	☐	☐	☐ Add ramps or lifts. ☐ Make another entrance accessible.
Are all public spaces on an accessible route of travel?	☐	☐	☐ Provide access to all public spaces along an accessible route of travel.
Is the accessible route to all public spaces at least 36 inches wide?	☐	☐ width	☐ Move furnishings such as tables, chairs, display racks, vending machines, and counters to make more room.
Is there a 5-foot circle or a T-shaped space for a person using a wheelchair to reverse direction?	☐	☐ width	☐ Rearrange furnishings, displays, and equipment.
Doors (ADAAG 4.13) Do doors into public spaces have at least a 32-inch clear opening?	☐	☐ clear opening	☐ Install offset (swing-clear) hinges. ☐ Widen doors.
On the pull side of doors, next to the handle, is there at least 18 inches of clear wall space so that a person using a wheelchair or crutches can get near to open the door?	☐	☐ clear space	☐ Reverse the door swing if it is safe to do so. ☐ Move or remove obstructing partitions.
Can doors be opened without too much force (5 lbf maximum for interior doors)?	☐	☐ force	☐ Adjust or replace closers. ☐ Install lighter doors. ☐ Install power-assisted or automatic door openers.
Are door handles 48 inches high or less and operable with a closed fist?	☐	☐ height	☐ Lower handles. ☐ Replace inaccessible knobs or latches with lever or loop handles. ☐ Retrofit with add-on levers. ☐ Install power-assisted or automatic door openers.
Are all threshold edges 1/4-inch high or less, or if beveled edge, no more than 3/4-inch high?	☐	☐ height	☐ If there is a threshold greater than 3/4-inch high, remove it or modify it to be a ramp. ☐ If between 1/4- aand 3/4-inch high, add bevels to both sides.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Rooms and Spaces (ADAAG 4.2, 4.4, 4.5)			
Are all aisles and pathways to materials and services at least 36 inches wide?	☐	☐ width	☐ Rearrange furnishings and fixtures to clear aisles.
Is there a 5-foot circle or T-shaped space for turning a wheelchair completely?	☐	☐ width	☐ Rearrange furnishings to clear more room.
Is carpeting low-pile, tightly woven, and securely attached along edges?	☐	☐	☐ Secure edges on all sides. ☐ Replace carpeting.
In circulation paths through public areas, are all obstacles cane-detectable (located within 27 inches of the floor or higher than 80 inches, or protruding less than 4 inches from the wall)?	☐	☐ height / protrusion	☐ Remove obstacles. ☐ Install furnishings, planters, or other cane-detectable barriers underneath.
Emergency Egress (ADAAG 4.28)			
If emergency systems are provided, do they have both flashing lights and audible signals?	☐	☐	☐ Install visible and audible alarms. ☐ Provide portable devices.
Signage for Goods and Services (ADAAG 4.30)			
Different requirements apply to different types of signs.			
If provided, do signs and room numbers designating permanent rooms and spaces where goods and services are provided comply with the appropriate requirements for such signage?	☐	☐	☐ Provide signs that have raised letters, Grade II Braille, and that meet all other requirements for permanent room or space signage. (See ADAAG 4.1.3(16) and 4.30.)
	Y	N	
• Signs mounted with centerline 60 inches from floor.	☐	☐ height	
• Mounted on wall adjacent to latch side of door, or as close as possible.	☐	☐	
• Raised characters, sized between 5/8 and 2 inches high, with high contrast (for room numbers, rest rooms, exits).	☐	☐ character height	
• Brailled text of the same information.	☐	☐	
• If pictogram is used, it must be accompanied by raised characters and braille.	☐	☐	

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Directional and Informational Signage The following questions apply to directional and informational signs that fall under Priority 2.			
If mounted above 80 inches, do they have letters at least 3 inches high, with high contrast, and non-glare finish? (letter height)	☐	☐	☐ Review requirements and replace signs as needed, meeting the requirements for character size, contrast, and finish.
Do directional and informational signs comply with legibility requirements? (Building directories or temporary signs need not comply.)	☐	☐	☐ Review requirements and replace signs as needed.
Controls (ADAAG 4.27) Are all controls that are available for use by the public (including electrical, mechanical, cabinet, game, and self-service controls) located at an accessible height? (height) **Reach ranges:** The maximum height for a side reach is 54 inches; for a forward reach, 48 inches. The minimum reachable height is 15 inches for a front approach and 9 inches for a side approach.	☐	☐	☐ Relocate controls.
Are they operable with a closed fist?	☐	☐	☐ Replace controls.
Seats, Tables, and Counters (ADAAG 4.2, 4.32, 7.2) Are the aisles between fixed seating (other than assembly area seating) at least 36 inches wide? (width)	☐	☐	☐ Rearrange chairs or tables to provide 36-inch aisles.
Are the spaces for wheelchair seating distributed throughout?	☐	☐	☐ Rearrange tables to allow room for wheelchairs in seating areas throughout the area. ☐ Remove some fixed seating.
Are the tops of tables or counters between 28 and 34 inches high? (height)	☐	☐	☐ Lower part or all of high surface. ☐ Provide auxiliary table or counter.
Are knee spaces at accessible tables at least 27 inches high, 30 inches wide, and 19 inches deep? (height / width / depth)	☐	☐	☐ Replace or raise tables.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Seats, Tables, and Counters, continued			
 At each type of cashier counter, is there a portion of the main counter that is no more than 36 inches high?	☐	☐ height	☐ Provide a lower auxiliary counter or folding shelf. ☐ Arrange the counter and surrounding furnishings to create a space to hand items back and forth.
 Is there a portion of food-ordering counters that is no more than 36 inches high, or is there space at the side for passing items to customers who have difficulty reaching over a high counter?	☐	☐ height	☐ Lower section of counter. ☐ Arrange the counter and surrounding furnishings to create a space to pass items.
Vertical Circulation (ADAAG 4.1.3(5), 4.3) Are there ramps, lifts, or elevators to all public levels?	☐	☐	☐ Install ramps or lifts. ☐ Modify a service elevator. ☐ Relocate goods or services to an accessible area.
On each level, if there are stairs between the entrance and/or elevator and essential public areas, is there an accessible alternate route?	☐	☐	☐ Post clear signs directing people along an accessible route to ramps, lifts, or elevators.
Stairs (ADAAG 4.9) The following questions apply to stairs connecting levels *not* serviced by an elevator, ramp, or lift.			
Do treads have a non-slip surface?	☐	☐	☐ Add non-slip surface to treads.
Do stairs have continuous rails on both sides, with extensions beyond the top and bottom stairs?	☐	☐	☐ Add or replace handrails if possible within existing floor plan.
Elevators (ADAAG 4.10) Are there both visible and verbal or audible door opening/closing and floor indicators (one tone = up, two tones = down)?	☐	☐	☐ Install visible and verbal or audible signals.
 Are the call buttons in the hallway no higher than 42 inches?	☐	☐ height	☐ Lower call buttons. ☐ Provide a permanently attached reach stick.
Do the controls inside the cab have raised and braille lettering?	☐	☐	☐ Install raised lettering and braille next to buttons.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Elevators, continued Is there a sign on both door jambs at every floor identifying the floor in raised and braille letters?	☐	☐	☐ Install tactile signs to identify floor numbers, at a height of 60 inches from floor.
If an emergency intercom is provided, is it usable without voice communication?	☐	☐	☐ Modify communication system.
Is the emergency intercom identified by braille and raised letters?	☐	☐	☐ Add tactile identification.
Lifts (ADAAG 4.2, 4.11) Can the lift be used without assistance? If not, is a call button provided?	☐	☐	☐ At each stopping level, post clear instructions for use of the lift. ☐ Provide a call button.
Is there at least 30 by 48 inches of clear space for a person in a wheelchair to approach to reach the controls and use the lift?	☐ ☐ ☐ clear space		☐ Rearrange furnishings and equipment to clear more space.
Are controls between 15 and 48 inches high (up to 54 inches if a side approach is possible)?	☐ ☐ ☐ height		☐ Move controls.
Priority 3 **Usability of Rest Rooms** When rest rooms are open to the public, they should be accessible to people with disabilities.			
Getting to the Rest Rooms (ADAAG 4.1) If rest rooms are available to the public, is at least one rest room (either one for each sex, or unisex) fully accessible?	☐	☐	☐ Reconfigure rest room. ☐ Combine rest rooms to create one unisex accessible rest room.
Are there signs at inaccessible rest rooms that give directions to accessible ones?	☐	☐	☐ Install accessible signs.
Doorways and Passages (ADAAG 4.2, 4.13, 4.30) Is there tactile signage identifying rest rooms? **Mount signs on the wall**, on the latch side of the door, complying with the requirements for permanent signage. Avoid using ambiguous symbols in place of text to identify rest rooms.	☐	☐	☐ Add accessible signage, placed to the side of the door, 60 inches to centerline (not on the door itself).

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Doorways and Passages, continued Are pictograms or symbols used to identify rest rooms, and, if used, are raised characters and braille included below them?	☐	☐	☐ If symbols are used, add supplementary verbal signage with raised characters and braille below pictogram symbol.
Is the doorway at least 32 inches clear?	☐ ☐ clear width		☐ Install offset (swing-clear) hinges. ☐ Widen the doorway.
Are doors equipped with accessible handles (operable with a closed fist), 48 inches high or less?	☐ ☐ height		☐ Lower handles. ☐ Replace knobs or latches with lever or loop handles. ☐ Add lever extensions. ☐ Install power-assisted or automatic door openers.
Can doors be opened easily (5 lbf maximum force)?	☐ ☐ force		☐ Adjust or replace closers. ☐ Install lighter doors. ☐ Install power-assisted or automatic door openers.
Does the entry configuration provide adequate maneuvering space for a person using a wheelchair? **A person in a wheelchair** needs 36 inches of clear width for forward movement, and a 5-foot diameter or T-shaped clear space to make turns. A minimum distance of 48 inches clear of the door swing is needed between the two doors of an entry vestibule.	☐ ☐ clear width		☐ Rearrange furnishings such as chairs and trash cans. ☐ Remove inner door if there is a vestibule with two doors. ☐ Move or remove obstructing partitions.
Is there a 36-inch-wide path to all fixtures?	☐ ☐ width		☐ Remove obstructions.
Stalls (ADAAG 4.17) Is the stall door operable with a closed fist, inside and out?	☐ ☐		☐ Replace inaccessible knobs with lever or loop handles. ☐ Add lever extensions.
Is there a wheelchair-accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing, OR is there a stall that is less accessible but that provides greater access than a typical stall (either 36 by 69 inches or 48 by 69 inches)?	☐ ☐ length/ width		☐ Move or remove partitions. ☐ Reverse the door swing if it is safe to do so.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Stalls, continued In the accessible stall, are there grab bars behind and on the side wall nearest to the toilet?	☐	☐	☐ Add grab bars.
Is the toilet seat 17 to 19 inches high?	☐	☐ height	☐ Add raised seat.
Lavatories (ADAAG 4.19, 4.24) Does one lavatory have a 30-inch-wide by 48-inch-deep clear space in front? **A maximum of 19 inches of the required depth may be under the lavatory.**	☐	☐ clear space	☐ Rearrange furnishings. ☐ Replace lavatory. ☐ Remove or alter cabinetry to provide space underneath. ☐ Make sure hot pipes are covered. ☐ Move a partition or wall.
Is the lavatory rim no higher than 34 inches?	☐	☐ height	☐ Adjust or replace lavatory.
Is there at least 29 inches from the floor to the bottom of the lavatory apron (excluding pipes)?	☐	☐ height	☐ Adjust or replace lavatory.
Can the faucet be operated with one closed fist?	☐	☐	☐ Replace with paddle handles.
Are soap and other dispensers and hand dryers within reach ranges (see page 7) and usable with one closed fist?	☐	☐	☐ Lower dispensers. ☐ Replace with or provide additional accessible dispensers.
Is the mirror mounted with the bottom edge of the reflecting surface 40 inches high or lower?	☐	☐ height	☐ Lower or tilt down the mirror. ☐ Add a larger mirror anywhere in the room.
Priority 4 Additional Access *Note that this priority is for items not required for basic access in the first three priorities.* When amenities such as drinking fountains and public telephones are provided, they should also be accessible to people with disabilities.			
Drinking Fountains (ADAAG 4.15) Is there at least one fountain with clear floor space of at least 30 by 48 inches in front?	☐	☐ clear space	☐ Clear more room by rearranging or removing furnishings.

QUESTIONS	Yes	No	POSSIBLE SOLUTIONS
Drinking Fountains, continued			
Is there one fountain with its spout no higher than 36 inches from the ground, and another with a standard height spout (or a single "hi-lo" fountain)?	☐	☐ height	☐ Provide cup dispensers for fountains with spouts that are too high. ☐ Provide accessible cooler.
Are controls mounted on the front or on the side near the front edge, and operable with one closed fist?	☐	☐	☐ Replace the controls.
Is each water fountain cane-detectable (located within 27 inches of the floor or protruding into the circulation space less than 4 inches from the wall?	☐	☐ height/ protrusion	☐ Place a planter or other cane-detectable barrier on each side at floor level.
Telephones (ADAAG 4.31)			
If pay or public use phones are provided, is there clear floor space of at least 30 by 48 inches in front of at least one?	☐	☐ clear space	☐ Move furnishings. ☐ Replace booth with open station.
Is the highest operable part of the phone no higher than 48 inches (up to 54 inches if a side approach is possible)?	☐	☐ height	☐ Lower telephone.
Does the phone protrude no more than 4 inches into the circulation space?	☐	☐ protrusion	☐ Place a cane-detectable barrier on each side at floor level.
Does the phone have push-button controls?	☐	☐	☐ Contact phone company to install push-buttons.
Is the phone hearing-aid compatible?	☐	☐	☐ Have phone replaced with a hearing-aid compatible one.
Is the phone adapted with volume control?	☐	☐	☐ Have volume control added.
Is the phone with volume control identified with appropriate signage?	☐	☐	☐ Add signage.
If there are four or more public phones in the building, is one of the phones equipped with a text telephone (TT or TDD)?	☐	☐	☐ Install a text telephone. ☐ Have a portable TT available. ☐ Provide a shelf and outlet next to phone.
Is the location of the text telephone identified by accessible signage bearing the International TDD Symbol?	☐	☐	☐ Add signage.

Appendix C – Primary Investigator Audit

Primary Investigator Building Audit

This audit will be completed by Primary Investigator on _____ (Date and time)

for the UNL building: _____ (Building name).

Primary Investigator will fill out this document for all 10 designated buildings on campus. Each audit will adhere to the same questions and instructions as given to the participants. Maps of each building will be the same for the Primary Investigator as with the Participants. As the Primary Investigator is aware of the locations of each building and how to get to them, a travel map for each building is not provided. Each building is, however, indicated below on the map for clarity.

As with each participant, the Primary Investigator will also use the following items:

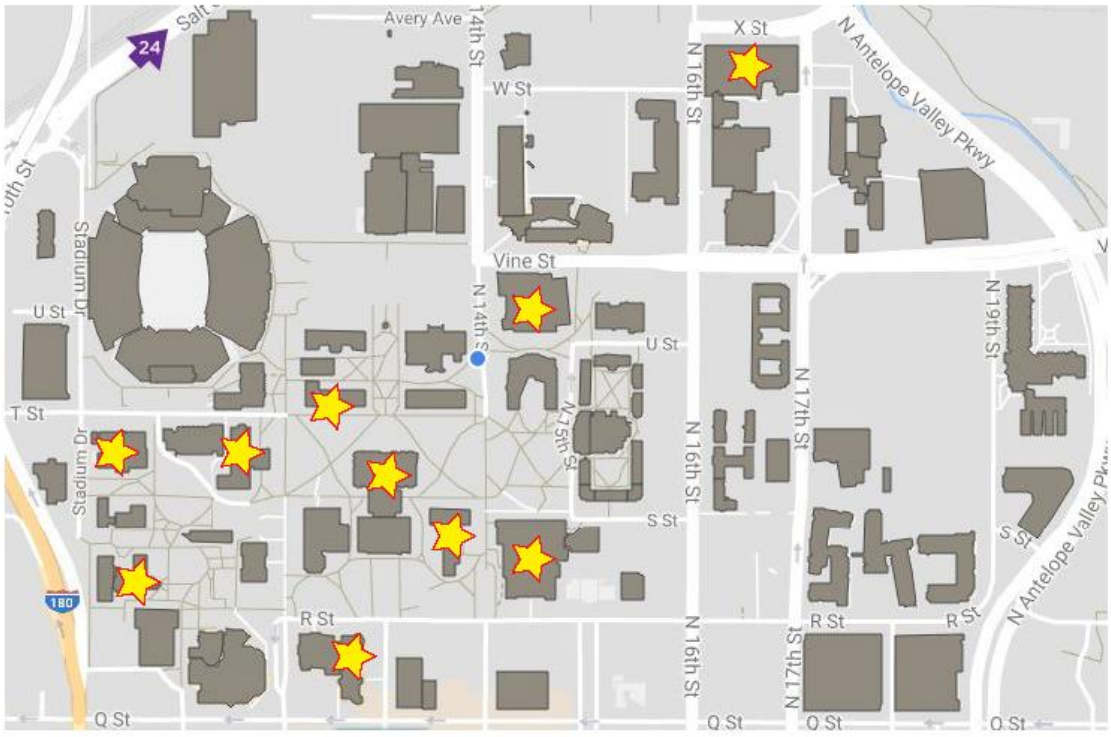
-A tape measure

-A clipboard

-A pen or pencil

KEY

Destinations

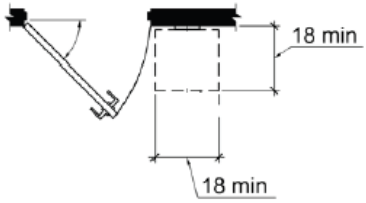


The first section of the audit requires measurements/data collection outside and around the building. All entrances/exits will be assessed in this portion, though only portions of the interior will be assessed, as denoted on the map on the last page. Please check the appropriate box below and add any additional information as needed. If additional space is needed to record data, use the back of this sheet.

Part 1: Egress and Access

QUESTIONS/DIAGRAMS	DATA COLLECTION
Is there a route of travel into the building that does not require the use of stairs?	☐ YES ☐ NO If yes, describe the route.
How many entrance doors exist in this building from the ground level? A double door counts as one entrance.	
How many of these entrances (if any) do not require the use of stairs?	
Of these entrances that do not require stairs (also called an accessible entrance), is the route of approach at least 36 inches wide?	☐ YES ☐ NO Please measure the width of the route(s).
Are there railings along any of the accessible entrances?	☐ YES ☐ NO
Do these railings measure between 34 and 38 inches high?	☐ YES ☐ NO Please measure the height of the railing(s).
Is the width between the railings at least 36 inches?	☐ YES ☐ NO Please measure the height of the railing(s).

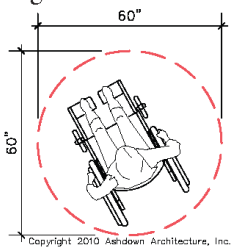
Is there a parking lot that services this building? Parking lots needing assessment are indicated on the map on the last page.	☐ YES ☐ NO If answer is no, skip the next four questions outlined in red.
How many total parking spaces are in this lot?	
How many accessible parking spaces are in this lot?	
How wide are the parking spaces?	
Are the accessible spaces closest to the accessible entrance?	☐ YES ☐ NO Explain.
If there are stairs at the main entrance, is there also a ramp or lift at this same entrance?	☐ YES ☐ NO Explain.
Is the accessible entrance a service entrance? A service entrance is defined as an entrance not intended for use by the general public, but for deliveries and/or removal of waste.	☐ YES ☐ NO
Do inaccessible entrance(s) have signs indicating the location of the nearest accessible entrance?	☐ YES ☐ NO
How many signs are provided at each inaccessible entrance to indicate the location of the nearest accessible entrance?	Please indicate the number at each location, not the total number.
At each accessible entrance, does the entrance door have at least a 32 inch clear opening? A double door with a jamb in the middle is measured from one side to the jamb.	☐ YES ☐ NO Please measure each door width.

At each accessible entrance, is there at least 18 inches of clear, unobstructed wall space on the pull side of the door next to the handle?  	☐ YES ☐ NO Please measure each clear space.
Is the door handle operable with a closed fist?	☐ YES ☐ NO To answer this question, attempt to open the door with the one hand.

Part 2: Interior Public Access

The second section of the audit focuses on public spaces within the building including hallways, corridors, office spaces, classrooms, and so on. Restrooms will be discussed in the next section. Please reference the map on the last page to determine what to measure and/or record for each question in this section. Please check the appropriate box below and add any additional information requested. If additional space is needed to record data, use the back of this sheet.

QUESTIONS/DIAGRAMS	DATA COLLECTION
Are all public spaces (as included in the map) on an accessible route of travel? Accessible route is defined as a continuous, unobstructed path connecting all accessible spaces.	☐ YES ☐ NO Explain.
Is the accessible route to all public spaces at least 36 inches wide?	☐ YES ☐ NO Please measure each width.
Locate the main office as indicated on the map. Is the doorway into the space at least 32 inches?	☐ YES ☐ NO Please measure.

On the pull side of doors, next to the handle, is there at least 18 inches of clear wall space?	☐ YES ☐ NO Please measure each as indicated on map.
Are door handles between 34 and 48 inches high?	☐ YES ☐ NO Please answer for each door as measured.
Please reference the map for the next section of measuring. Highlighted spaces on the map should only be measured if you can do so without disturbing classes in progress. Please note which spaces on your map you were and were not able to measure, with reasons why you were unable. There are check boxes and a small writing space for each of the highlighted spaces located on your map.	
Are aisles and pathways in these spaces at least 36 inches wide?	☐ YES ☐ NO Please answer for each space. For example, Room 101 has 36" pathways and Room 103 has 30" pathways.
Is there a 60 inch diameter circle or T-shaped space for turning a wheelchair completely? 	☐ YES ☐ NO Please answer for each space.
Is there carpeting in these spaces? If yes, is the carpet low-pile, tightly woven, and securely attached along edges? Low-pile is defined as short loops in the carpet fabric, whereas a shag rug would be defined as high-pile due to the long loops making the carpet fabric looser.	☐ YES ☐ NO Please answer for each space.

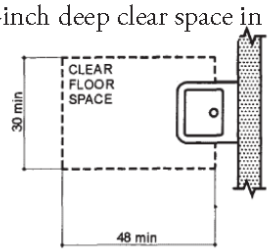
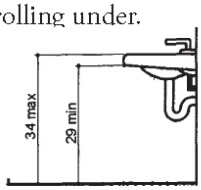
In the aisles and pathways as measured previously, are all obstacles cane-detectable? Cane detectable clearances are no more than 27 inches off the floor, or higher than 80 inches off the floor, protruding less than 4 inches from the wall?	☐ YES ☐ NO Please answer/measure for each obstacle.
Are signs in designated spaces at least 60 inches above the floor?	☐ YES ☐ NO Please measure each.
Are signs mounted on the wall adjacent to the latch side of the door?	☐ YES ☐ NO Please answer for each.
Are all light switches and outlets in the highlighted areas at an accessible height? The height range for an accessible control is between 9 and 54 inches.	☐ YES ☐ NO Please measure each.
Are lighting controls operable with a closed fist?	☐ YES ☐ NO
Are there spaces for wheelchair seating?	☐ YES ☐ NO
If the answer to the last question was yes, are these seats distributed throughout the space?	☐ YES ☐ NO
Are the tops of tables or counters between 28 and 34 inches high?	☐ YES ☐ NO Please measure each.

In the office/lobby area as indicated on the map, is there a portion of the main counter that is no more than 36 inches high?	☐ YES ☐ NO Please measure.
Do stair treads have a non-slip surface? Non-slip is defined as designed to reduce or prevent slipping.	☐ YES ☐ NO Explain.
Do stairs have continuous rails on both sides, with extensions beyond the top and bottom stairs?	☐ YES ☐ NO Please measure extensions.
If the building has elevators (indicated on your map), are there both visible and audible door opening/closing and floor indicators in the elevator(s)?	☐ YES ☐ NO Please describe each.
Are the call buttons for the elevator(s) no higher than 42 inches?	☐ YES ☐ NO Please measure each.
Is there at least one drinking fountain with clear floor space of at least 30 by 48 inches in front?	☐ YES ☐ NO Please measure each.
Is there at least one drinking fountain spout measuring no more than 36 inches from the ground and another measuring between 38 and 43 inches?	☐ YES ☐ NO Explain and measure each.
Are water fountain controls operable with a closed fist?	☐ YES ☐ NO Explain and answer for each.

Part 3: Restroom Access

The last section focuses on the restroom(s) within the building. Please reference the map on the last page to determine what to measure and/or record for each question in this section. Please check the appropriate box below and add any additional information requested. If additional space is needed to record data, use the back of this sheet. You will only be asked to collect data in the restroom of your identified gender, as noted on the map.

Is at least one restroom fully accessible? Fully accessible could describe a separate room designated as handicapped or an accessible stall in a larger restroom.	☐ YES ☐ NO Explain and answer for each.
Are there signs at inaccessible restrooms that give directions to accessible ones?	☐ YES ☐ NO Explain.
Are there signs on the latch side of the door to identify restrooms?	☐ YES ☐ NO If answering no, please note where the signs are located.
Is the doorway to access the restroom at least 32 inches clear?	☐ YES ☐ NO Please measure.
Is there a 36-inch wide path to all fixtures in the restroom?	☐ YES ☐ NO Please measure.
Are the stall doors operable with a closed fist, inside and out?	☐ YES ☐ NO Explain.
How many wheelchair accessible stalls are there in this restroom?	8

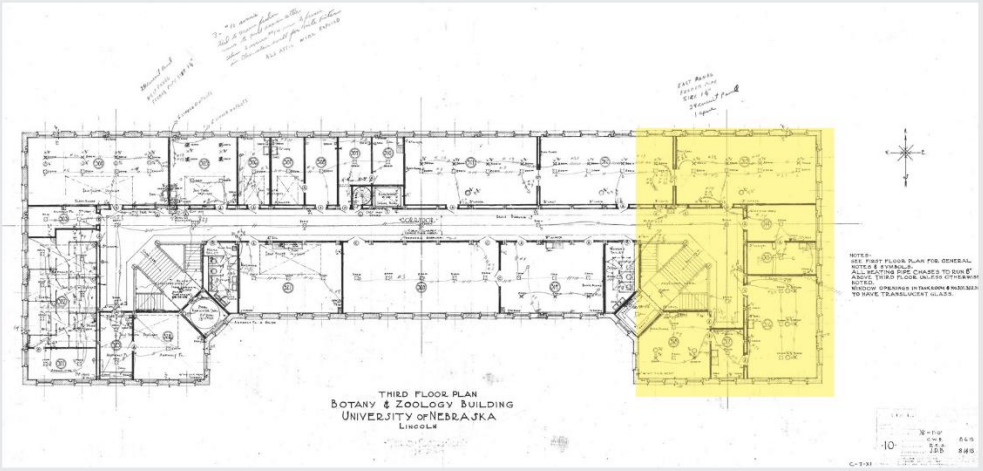
Is there a wheelchair accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing?	☐ YES ☐ NO Please measure each accessible stall.
In the accessible stall(s), are there grab bars behind the toilet and on the side wall?	☐ YES ☐ NO Explain.
Does the toilet seat measure between 17 and 19 inches from the ground?	☐ YES ☐ NO Please measure.
Does at least one lavatory (sink) have a 30-inch wide by 48-inch deep clear space in front of it? 	☐ YES ☐ NO Please measure.
Is the lavatory rim no higher than 34 inches?	☐ YES ☐ NO Please measure.
Is there at least 29 inches from the floor to the bottom of the lavatory apron? The lavatory apron is defined as the bottom of the sink basin that protrudes out and could interfere with a wheelchair rolling under. 	☐ YES ☐ NO Please measure.

This concludes the building audit. Primary Investigator will complete all additional audits, thus completing the data collection for the Primary Investigator. Data will not be analyzed until after all participants have completed their audits to prevent any kind of bias.

END OF AUDIT

Map of (Insert building name)

As stated in audit, sections of each building will be highlighted on the map, as exemplified below, to show where measurements are to be taken and data collected. Check boxes are also included in case a space is not measurable at the time. Map will take up entirety of this grey box, or will be on a supplemental page if size requires.



Able to measure?
Room name/number: Yes ☐ No ☐ Notes:
Room name/number: Yes ☐ No ☐ Notes:
Room name/number: Yes ☐ No ☐ Notes:
etc....

N

Appendix D – Participant Recruitment Ad

Volunteers Needed For Research Study

Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus

The Architecture Department is conducting research to find out how often UNL campus buildings adhere to minimum accessible design standards and to understand participant perceptions regarding accessible design.

Eligible participants include UNL students, faculty, and staff aged 19-65 of all gender identities who speak and can read the English language.

You will be asked to complete one to two building compliance audits with a survey and the study involves roughly 3 hours of total time over a one-week period. Participation will take place in room 108 of Architecture Hall and in select buildings on campus. There are minimal risks involved in this research. Up to $10 in gift cards can be rewarded for participation.

Please call 402-206-1906 or
email emily.drummy@huskers.unl.edu
with any questions and to volunteer for participation
IRB 18094

University of Nebraska Lincoln

UNL does not discriminate based upon any protected status. Please see go.unl.edu/nondiscrimination

Appendix E – Participant Recruitment Flyer

VOLUNTEERS NEEDED FOR RESEARCH STUDY

Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus

IRB#18094

- The Architecture Department is conducting research to find out how often UNL campus buildings adhere to minimum accessible design standards and to understand participant perceptions regarding accessible design.
- *Eligible participants include UNL students, faculty, and staff aged 19-65 of all gender identities who speak and can read the English language.*
- You will be asked to complete one to two building compliance audits with a survey and the study involves roughly 3 hours of total time over a one-week period.
- Participation will take place in room 108 of Architecture Hall and in select buildings on campus
- There are minimal risks involved in this research.
- Up to $10 in gift cards can be rewarded for participation.

University of Nebraska Lincoln

UNL does not discriminate based upon any protected status. Please see go.unl.edu/nondiscrimination

Emily Drummy 402-206-1906 emily.drummy@huskers.unl.edu
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Appendix F – Email Correspondence

Below is the list of all email correspondence that could potentially be sent as a result of the process and procedures of the research study.

Response to potential participant

(name of potential participant),

Thank you for your inquiry about the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. Please confirm that you fit the eligibility criteria once more before further participation:

UNL student, faculty, or staff aged 19-65 of any gender identity; can read and speak the English language.

If you still fit the eligibility criteria, please respond with your availability on Monday (insert date) between 8 am and 5 pm to sign the form of informed consent and to complete your training. Participation in the study will only take place over this one week during business hours of Monday through Friday 8 am to 5 pm. Time commitment is no more than three hours during this week. For the training and informed consent signing, twenty minutes to an hour of time will be required. This meeting will take place in person in Architecture Hall room 108. If you require further directions to locate this room, please let me know.

If you have further questions or no longer wish to participate in this study, please let me know.

Thank you,
Emily Drummy

Follow up to potential participant with time availability given

(name of participant),

Thank you for providing your availability for participation in the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. Your scheduled training time is Monday (insert date, insert time) in room 108 of Architecture Hall. If you require directions to get to this location, please let me know. As a reminder, this session will involve signing of informed consent and training for data collection. It should take roughly twenty minutes to an hour of your time. During this session, you will also be given a participant ID code so that your name will be removed from further data

collection documents and tools. Please also have your availability handy for the week, as you will be scheduling times for data collection during this first session.

If you have further questions or no longer wish to participate in this study, please let me know.

Thank you,
Emily Drummy

Response to potential participant who is not needed for the study

(name of participant),

Thank you for your inquiry about the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. All participants have been assigned and your participation will not be needed. Thank you for your time and willingness to contribute to the thriving research community at the University of Nebraska-Lincoln. If you have any further questions or concerns, please let me know.

Thank you,
Emily Drummy

Reminder of appointment (if scheduled more than 24 hours out)

(name of participant),

This is a reminder of your first session to participate in the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. You are scheduled for training and signing of informed consent at (insert time and date) in room 108 of Architecture Hall. If you can no longer make this appointment or you wish to withdraw from the study, please let me know.

Thank you,
Emily Drummy

Reminder of appointment for audit (one audit)

This is a reminder of your scheduled data collection appointment for the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. You are scheduled to collect data on (insert date and time). You will begin your session in room 108 of Architecture Hall and will then travel to your designated data collection site, which is (insert building name). Upon completion of your audit, you will return all materials to room 108 of Architecture Hall. If this is your only audit to complete, you will also fill out a survey. If you have another audit scheduled for another time, you will complete the survey following that audit. You will receive compensation at the time you return your materials. All instructions will be reiterated at the time of your appointment. If you have any questions, concerns, or wish to no longer participate, please let me know.

Thank you,
Emily Drummy

Reminder of appointment for audit (back to back audits)

This is a reminder of your scheduled data collection appointment for the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. You are scheduled to collect data on (insert date and time). You will begin your session in room 108 of Architecture Hall and will then travel to your designated data collection site, which is (insert first building name). Upon completion of this data collection, you will return materials to room 108 and receive your second set of materials for your data collection in (insert second building name). Upon completion of the second set of data collection, you will fill out a survey and receive compensation for both audits. A follow up email will be sent with brief results following the completion of all data collection. All instructions will be reiterated at the time of your appointment. If you have any questions, concerns, or wish to no longer participate, please let me know.

Thank you,
Emily Drummy

Reminder of appointment for audit (second audit scheduled at different time)

This is a reminder of your second scheduled data collection appointment for the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. You are scheduled to collect data on (insert date and time). You will begin your session in room 108 of Architecture Hall and will then travel to your designated data collection site, which is (insert building name). Upon completion of your audit, you will return all materials to room 108 of Architecture Hall. You will then complete a survey. You will receive compensation at the time you return your materials. A follow up email will be sent with brief results following the completion of all data collection. All instructions will be reiterated at the time of your appointment. If you have any questions, concerns, or wish to no longer participate, please let me know.

Thank you,
Emily Drummy

Follow up email (if data collection is not yet complete)

In accordance with the procedures of the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**, this email is to follow up on your completed data collection. At this time, you have completed all requirements of the research study. Thank you for your time! All data has yet to be collected and compared, so you will receive an additional email with brief study results at the conclusion of data collection. If you do not wish to receive these results, please let me know. The results will be the final email communication with you regarding this study. Again, thank you for your time and for contributing to the data collection process.

Thank you,
Emily Drummy

Follow up email with final results

In accordance with the procedures of the research study **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**, this email is to follow up on the completed data collection for the study. All data has been collected and analyzed with an attached PDF of some of the results and a summary of their implications. In an effort to remain transparent in the research, the results are being shared with all participants. Any identifying information has been removed for the privacy of all participants involved. I will continue to make efforts to protect the privacy of each participant and the

confidentiality of the material. Thank you again for contributing to my research with your time and data collection. This will be the last email correspondence on my end regarding the research study. If you have any further questions or concerns, please let me know.

Thank you,
Emily Drummy

Email to ADA compliance officer

Dear Ms. Horn,

My name is Emily Drummy and I am a second year graduate student in the College of Architecture pursuing a Master of Science degree in Interior Design. I am in the process of my thesis titled **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. In this research study, several volunteer participants and I are collecting data on accessibility features of sections of 10 different buildings on campus. We are analyzing ADA Design Standards to determine if designers typically adhere to just the minimums or if they go beyond the minimum. I hypothesize that more often than not, designers adhere to just the minimums and treat them as the standard, rather than a minimum that can be exceeded. As someone who is passionate about accessibility and universal design, I hope to prove with this data the need for designers to do more for the people they design for and I hope to provide evidence for a push for improving the minimums.

I am reaching out to you as the University ADA compliance officer for several reasons: I want to inform you of the research I intend to complete on campus this semester, as ADA Design Standards are at the forefront of the study; I also want to inform you that in no way am I trying to prove non-compliance or say that the University is in non-compliance. I understand that the university works diligently to enforce ADA and to work on behalf of all students of all abilities on campus. In addition, I am requesting ADA compliance check information on the following buildings:
Canfield Administration building
New College of Business
Burnett
Nebraska Hall
Love Library
Richards Hall
Union
Mary Ripema Ross Center
Architecture hall
Hamilton Hall

By knowing the date of the last compliance check of each of these buildings, I will be able to determine how compliant each building should be based on its construction history, renovation

history, and efforts to improve compliance. This information is also useful in the event that we would come across any areas on our accessibility audit that are non-compliant, I would be able to reference the previous compliance checks to see if the University is already aware of the issue and to see how they are already fixing it. The intent of the research is to identify how designers interpret the minimums of the standards and in no way is a challenge of the compliance of the University. Additionally, if any areas came up that were not documented, I would be sure to inform you via email or the SSD grievance process. I have also given your information to the study participants as a resource in the event that they have questions or concerns following my study.

Generally I hope that you will be able to assist me in understanding the history of compliance with each of these buildings so that I can have a better starting point for my own data collection. I have attached my audit that will be used for your convenience and I would be happy to answer any questions or concerns you may have with this study.

Thank you for your time and I look forward to future correspondence.

Emily Drummy

Email to building maintenance reporters

(name of BMR for each building),

My name is Emily Drummy and I am a second year graduate student in the College of Architecture pursuing a Master of Science degree in Interior Design. I am in the process of my thesis titled **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. In this research study, several volunteer participants and I are collecting data on accessibility features of sections of 10 different buildings on campus. One of these buildings includes (insert building name). As our research involves data collection in the building in which you are the building maintenance reporter, I wanted to inform you of the data being collected in your building as a part of my thesis work. Data collection should not disrupt classes or take place during times in which buildings are not open. Data collection will take place during the week of (insert dates). The data is purely for use in my thesis. Should we come across any issues in our data collection, we will be reaching out to the ADA compliance officer on campus. If you have any questions or concerns with this process, please let me know.

Thank you,
Emily Drummy

Email to Deans/Department heads

Dear (name of person),

My name is Emily Drummy and I am a second year graduate student in the College of Architecture pursuing a Master of Science degree in Interior Design. I am in the process of my thesis titled **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**. In this research study, several volunteer participants and I are collecting data on accessibility features of sections of 10 different buildings on campus. Your building, (insert building name), is one of the data collection sites. Myself and one volunteer participant will be in your building to conduct an accessibility audit for less than two hours of total time over the period of (insert time frame). We will make every effort to not disturb classes or get in the way of those using the building. I simply wanted to inform you that research would be taking place in your building so you are aware why several students are measuring and observing building features! If you have any questions or concerns, please let me know.

Thank you,
Emily Drummy

Email of incidental finding for compliance officer

Dear Ms. Horn,

As discussed in a previous email, as a part of my thesis titled **Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln campus**, I would inform you of any incidental findings in the research which showed non-compliance of certain features of analyzed buildings. Upon completion of our data collection, we found that (insert building name) seems to be in non-compliance in regards to (insert specific occurance). My intentions still remain that I do not wish to challenge the compliance of the University, only that I want to make sure you are aware of any potential issues in ensuring the health, safety, and welfare of all students of all abilities on campus. If you would like me to file a formal grievance of this issue, please let me know. If you need any additional information, please also let me know.

Thank you,
Emily Drummy

Facilities Infrastructure Request

Utilized to get recent floor plans of buildings to be analyzed.

A request will be submitted via the online form as shown below through images and found at this address: https://scsapps.unl.edu/infrastructureinformationrequest

Responses to inquiries on the form are as follows:

Emily
Drummy
Graduate Student/Thesis Primary Investigator
College of Architecture
emily.drummy@huskers.unl.edu
402-206-1906

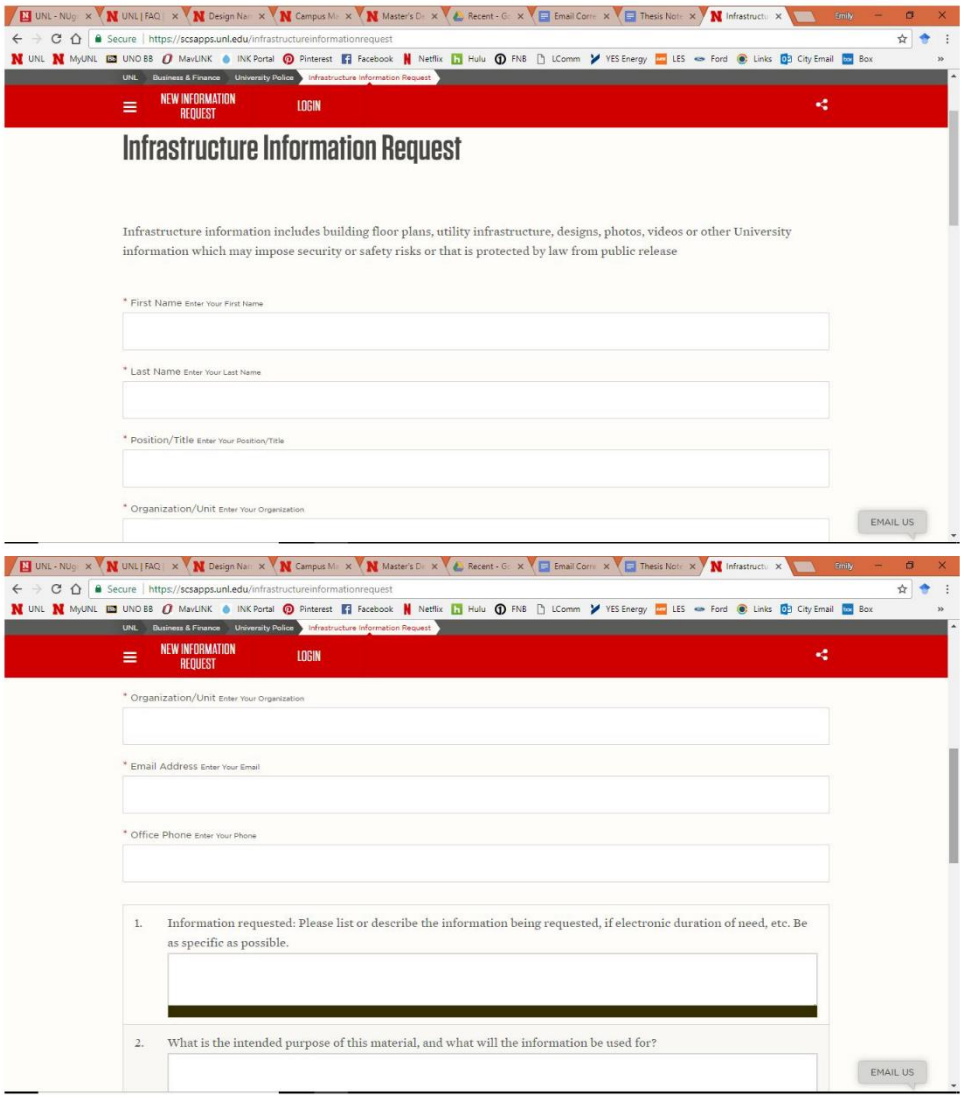
1. I am requesting first floor and lower level floor plans for the following buildings on campus: Canfield Administration building

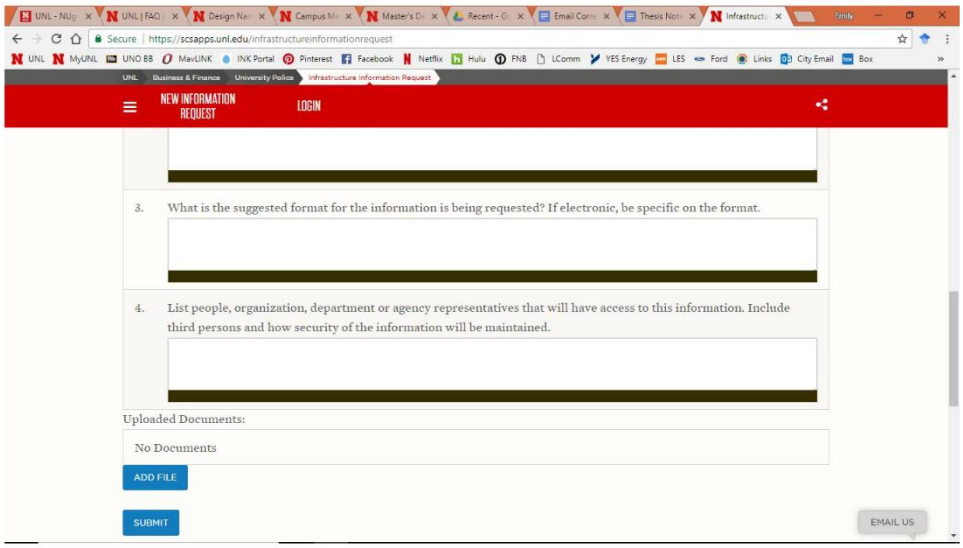
New College of Business
Burnett
Nebraska Hall
Love Library
Richards Hall
Union
Mary Ripema Ross Center
Architecture hall
Hamilton Hall
The floor plans are needed to analyze entrances/exits, restrooms, access within the building to interior spaces, and stairs/elevators. Site context such as ramps, stairs, and other approaches to the buildings should be included.

2. This information is to be used to collect data on ADA Design Standards as a part of a graduate thesis. The floor plans will allow five to ten volunteer participants to locate certain building features to measure and collect data according to ADA Design Standards. The purpose of this research is to see if designers typically meet but not exceed minimum standards or if they commonly go above the minimum standard. As participants will have limited knowledge of floor plans and construction documentation, simple floor plans indicating walls, windows, doors, plumbing, stairs, elevators, and other interior features will assist in data collection. RCPs, lighting plans, HVAC, electrical or other plans are not necessary.

3. Digital PDF plans in 1/8th inch scale would suffice, though Revit or CAD plans would be ideal. As they do not need to be too detailed of plans, SketchUp files would also be sufficient. The format is flexible as long as plans can be finished quickly.

4. As the primary investigator of the thesis, I will be the only person with complete access to these plans for the research. Participants will only receive one to two partial plans for their data collection and these plans will only be given to the participants while they collect the data. No participant will keep plans after participation. As the plans are just a tool for the participants to find their way in each building, they will not be included in the final thesis document. Only small portions of plans, if at all, would be included in the final work if anomalies existed. Upon completion of data collection, the digital copies of each plan as well as any printed copies used for the study will be destroyed. It is of the utmost importance to protect the students, staff, and faculty of this campus by ensuring the plans do not get in the hands of anyone who could use them for ill-intended purposes. Any portions of the plans that may potentially be included would only be viewed by the thesis review board of the primary investigator, consisting of three faculty in the College of Architecture, as well as Graduate Studies representatives to add the work to the digital suppository. If any partial plans were included in the final work, identifying information of the building would be removed as an extra precaution.


Secure | https://scsapps.unl.edu/infrastructureinformationrequest
UNL Business & Finance University Police Infrastructure Information Request
NEW INFORMATION REQUEST
LOGIN
Infrastructure Information Request
Infrastructure information includes building floor plans, utility infrastructure, designs, photos, videos or other University information which may impose security or safety risks or that is protected by law from public release
* First Name Enter Your First Name
* Last Name Enter Your Last Name
* Position/Title Enter Your Position/Title
* Organization/Unit Enter Your Organization
EMAIL US
* Email Address Enter Your Email
* Office Phone Enter Your Phone
1. Information requested: Please list or describe the information being requested, if electronic duration of need, etc. Be as specific as possible.
2. What is the intended purpose of this material, and what will the information be used for?


Secure | https://scsapps.unl.edu/infrastructureinformationrequest
UNL
Business & Finance
University Police
Infrastructure Information Request
NEW INFORMATION REQUEST
LOGIN
3. What is the suggested format for the information is being requested? If electronic, be specific on the format.
4. List people, organization, department or agency representatives that will have access to this information. Include third persons and how security of the information will be maintained.
Uploaded Documents:
No Documents
ADD FILE
SUBMIT
EMAIL US

Appendix G – Informed Consent

University of Nebraska Lincoln

IRB #: 18094

Participant Study Title: ADA Compliance Audit and Survey

Formal Study Title: Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus

Authorized Study Personnel

Principal Investigator: Emily Drummy, B.F.A. Cell: (402) 206-1906
Secondary Investigator: Lindsey Bahe, BSD, MARCH Office: (402) 472-0033

Key Information:

If you agree to participate in this study, the project will involve:

- Persons of all gender identities between the ages of 19 and 65
- Procedures will include a brief training in common industry terms, training in site measuring, completion of one to two compliance audits, completion of a survey
- 3 visits are required
- These visits will take 3 hours total
- There minimal to no risks associated with this study
- You will be paid no less than $5 and no more than $10 for your participation
- You will be provided a copy of this consent form

Invitation
You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask.

Why are you being asked to be in this research study?

You are being asked to be in this study because you are a UNL Student, faculty member, or staff member. You must be 19 years of age or older to participate.

What is the reason for doing this research study?

Designers seem to only strive to meet minimum design standards in building design. Since minimums are often not enough for those with disabilities, the purpose of this study is to determine if designers are actually only striving for minimums or if they tend to go above the minimums. If minimums are just met the majority of the time, this study can help to improve the state of accessible design in the future and allow better access for all students to live and learn on campus. The survey also seeks to understand perceptions of accessibility from users of the campus.

What will be done during this research study?

You will be asked to complete 1 or 2 compliance audits on one or two different buildings on campus that will be randomly assigned to you. At the time of training, you will be informed how many audits you will be expected to complete. After completing the training in design terminology and site measuring, you will sign up for one hour time slot(s) to complete the audit(s). You will also complete a brief survey at the time you complete the audit(s). During your designated time slot(s), you will pick up your audit materials from the primary investigator in room 108 of Architecture Hall. You will then travel to the building(s) you are assigned and complete the audit(s). You will also have one survey to complete when you are done with your audit(s). The survey will also be given to you during your designated time. When done with the survey and audit, you will return all materials to the primary investigator in room 108 of Architecture Hall. Upon completion of all audits asked of you, you will receive monetary compensation as outlined in the participant compensation form that will be given to you at the time of your training.

What are the possible risks of being in this research study?

This research presents risk of loss of confidentiality, emotional and/or psychological distress because the audit involves data collection on the UNL campus where identity could be witnessed and the survey may ask questions the participant could find to be of distressing subject matter.

What are the possible benefits to you?

Potential benefits to you include new or improved knowledge in how to measure building elements, education in accessibility terminology, and education in accessibility issues in design. However, you may not get any benefit from being in this research study.

What are the possible benefits to other people?

The benefits to science and/or society may include better understanding of how designers interpret minimum design standards to not be exceeded and how the standards can be changed to account for this interpretation of the standards. If the hypothesis is confirmed, further work can be pursued to improve the standards and push for better practices in building design. Benefits to those with disabilities also include more attention to how accessibility is defined and improved on campus buildings to ensure equal access and opportunity for all.

What are the alternatives to being in this research study?

Instead of being in this research study you can choose not to participate.

What will being in this research study cost you?

There is no cost to you to be in this research study.

Will you be compensated for being in this research study?

You will receive a $5.00 gift card for each audit completed for your participation in this study. You will have a choice in where you would like your gift card to be from, with the exception of any location that sells alcohol. You will indicate your preferences on a separate form.

What should you do if you have a problem during this research study?

Your welfare is the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form. If you have a problem with any of the data collected in regards to compliance, the UNL ADA compliance officer can also be contacted via phone at 402-472-8404 or emailed at chorn@nebraska.edu.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your study data. The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law or contract. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form.

For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):

- Phone: 1(402)472-6965
- Email: irb@unl.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or you can stop being in this research study ("withdraw') at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect you relationship with the investigator or with the University of Nebraska-Lincoln.

You will not lose any benefits to which you are entitled.

Documentation of informed consent

You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep.

Participant Feedback Survey

The University of Nebraska-Lincoln wants to know about your research experience. This 14 question, multiple-choice survey is anonymous. This survey should be completed after your participation in this research. Please complete this optional online survey at: http://bit.ly/UNLresearchfeedback.

Participant Name:

_____
(Name of Participant: Please print)

Participant Signature:

_____ _____
Signature of Research Participant Date

Investigator certification:
My signature certifies that all elements of informed consent described on this consent form have been explained fully to the subject. In my judgment, the participant possesses the capacity to give informed consent to participate in this research and is voluntarily and knowingly giving informed consent to participate.

_____ _____
Signature of Person Obtaining Consent Date

Appendix H – Training Documentation

Research Study Training

The following is a training program to be completed after signing the Informed Consent document for all participants wishing to participate in the research study titled: Challenging the Norm of Minimums: A Case Study of ADA Design Standards on the University of Nebraska-Lincoln Campus. Training will consist of lessons in how to site measure interior and exterior environments so each participant will be able to complete their audit with minimal confusion and misunderstanding. Site measuring is the act in which someone takes a measurement of a feature, object, or other item in a specified location. In order to be able to site measure with accuracy, participants will practice measuring items in Room 108 and will be given a list of definitions to better understand the tasks that will be asked of them in data collection.

Definitions

Compliance: conformity in fulfilling official requirements. ADA compliance is adhering to the official requirements of the ADA Standards for Accessible Design, also known as the ADA Design Standards.

Accessibility: capable of being used or seen; capable of being understood or appreciated; the quality of being easy to obtain or use

ADA: “The Americans with Disabilities Act (ADA) became law in 1990. The ADA is a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public. The purpose of the law is to make sure that people with disabilities have the same rights and opportunities as everyone else. The ADA gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. The ADA is divided into five titles (or sections) that relate to different areas of public life.” (DHHS, 2018)

Standard: something established by an authority, custom, or general consent as a model or example; something set up and established by authority as a rule for the measure of quantity, weight extent, value, or quality.

Code: a systematic statement of a body of law; a system of principles or rules. Code in the design field is synonymous with law.

Guideline: an indication or outline of policy or conduct

Clear width: Clear distance measured between walls or other fixed obstructions (except permitted localised obstructions) or across a path.

Slope: rise over run; a ratio of the height and distance covered by a ramp or other elevated surface.

Door width: the measurement of the actual door; height and width of a door within a door frame

Door swing: the area in which a door takes up space when opening or closing. Typically doors are designed so that their door swing will not interfere with any other objects or obstructions.

Egress: a place or means of going out; the action or right of going or coming out

Minimum: the least quantity assignable, admissible, or possible; the lowest degree or amount of variation.

Centerline: a real or imaginary line that is equidistant from the surface or sides of something

Clear space: an area in which no obstructions or interferences occur; the open space adjacent to, in front of, behind of, or generally surrounding an object to allow for access to the object. Example: There were three feet of clear space in front of the sink so she could easily get to it from the door.

Roll-under: an item in which a wheelchair user would be able to approach and use the item from their seated position without interference or obstruction of the item

Clearances: the distance by which one object clears another or the clear space between them.

Disability: a physical, mental, cognitive, or developmental condition that impairs, interferes with, or limits a person's ability to engage in certain tasks or actions or participate in typical daily activities and interactions; impaired function or ability; a disqualification, restriction, or disadvantage

Site Measuring

In order to be prepared to site measure, several measurements will be taken in room 108 and several lessons given in how to appropriately measure items.

Keys to measuring:

- When measuring a space or item, it is vital to keep the tape measure straight and taut to ensure accurate measuring.
- The tape should be kept parallel to the surface in which you are measuring. For example, keep the tape flat along the floor to measure a wall length and keep the tape vertical to measure a door height.
- The tape measure has a locking mechanism to keep the tape extended at its current distance. This can be useful to accurately read the measurement.

- The tape is also flexible enough to bend into a corner or around an object in order to read the most accurate dimension.

Measuring practice

Measure the entry door door width: _____
Measure the clear width of the door opening: _____
Measure the door height: _____
Measure the clear opening of the door height: _____
Measure the height of the table from the floor to the top surface: _____
Measure the depth of the desk along the centerline: _____
Measure the seat height of the rolling chair: _____
Measure the Chalkboard on the North wall (length and height): _____
Measure the height of the Chalkboard from the floor to the lowest dimension: _____
Measure the height, width, and depth of the filing cabinet: _____
Measure the area of the room (length and width of the floor): _____

Any questions on how to measure? You will have this document with you while completing the audit(s) to reference definitions and as a reminder of how to measure certain dimensions. Any type of measurement that may be new or different will have a short explanation with it.

Sources
Merriam Webster Dictionary
Department of Justice
Department of Health and Human Services

Appendix I – Compensation Document

Participant Compensation Preferences Participant ID code:_____

Participant was asked to complete:

_____1 compliance audit

_____ 2 compliance audits

If completing one audit, participant will receive one $5 gift card

If completing two audits, participant will receive EITHER
-one $10 gift card
OR
-two $5 gift cards

Please list your preference for amount of gift card and location of gift card*

____ $5 gift card to _____

____ $5 gift card to_____

____ $10 gift card to _____

*As this research study is affiliated with the University of Nebraska-Lincoln, no gift card location that allows the sale of alcohol will be permitted for compensation

Appendix J – Participant Audit

TEXT IN GRAY SHOWN FOR CLARIFICATION OF IRB, WILL BE FILLED IN/DELETED FOR DISTRIBUTION TO PARTICIPANT'S

Participant Building Audit

This audit will be completed by participant (Participant ID code) on (Date and time)

for the UNL building: (Building name).

As discussed in the training for this study, each participant will travel to the assigned building to conduct the building audit. Areas to collect data and measure around and within each building are denoted on the map attached as the last page of this document. Map callouts also align with certain questions for which confusion on what to measure may arise. Most questions have an "explain" section to write any notes or to answer the question in further depth. If you have nothing further to add to answer the question, this section may be left blank. If you do not feel comfortable collecting data for any of the questions, you will not be forced to answer the questions. You are still free to leave the study at any point. Once completed, please return this document to Room 108 of Architecture Hall. The primary investigator will be there to collect your data in person. As described in the training and participant informed consent document, you will receive compensation upon returning your materials and you will also receive a survey to fill out at the completion of all of your data collection. Thank you again for participating.

In addition to this document, each participant will receive:

-A tape measure

-A clipboard

-A pen or pencil

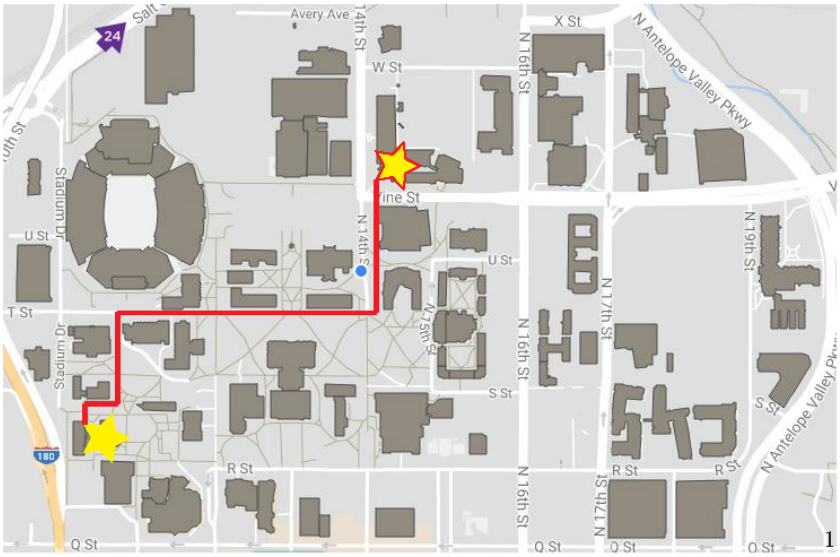
To travel to your assigned building, below is a map of the campus with a recommended path of travel. Participants may choose another path of travel if they so desire.

KEY

You are Here

Path of Travel

Destination



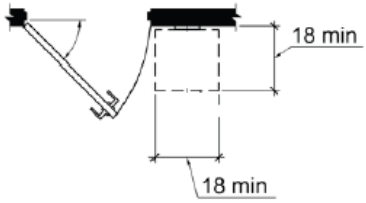
(EXAMPLE IS SHOWN FOR CLARIFICATION, WILL DIFFER FOR EACH AUDIT)

The first section of the audit requires measurements/data collection outside and around the building. All entrances/exits will be assessed in this portion, though only portions of the interior will be assessed, as denoted on the map on the last page. Please check the appropriate box below and add any additional information as needed. If additional space is needed to record data, use the back of this sheet.

Part 1: Egress and Access

QUESTIONS/DIAGRAMS	DATA COLLECTION
Is there a route of travel into the building that does not require the use of stairs?	☐ YES ☐ NO If yes, describe the route.
How many entrance doors exist in this building from the ground level? A double door counts as one entrance.	
How many of these entrances (if any) do not require the use of stairs?	
Of these entrances that do not require stairs (also called an accessible entrance), is the route of approach at least 36 inches wide?	☐ YES ☐ NO Please measure the width of the route(s).
Are there railings along any of the accessible entrances?	☐ YES ☐ NO
Do these railings measure between 34 and 38 inches high?	☐ YES ☐ NO Please measure the height of the railing(s).
Is the width between the railings at least 36 inches?	☐ YES ☐ NO Please measure the height of the railing(s).

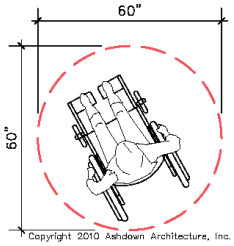
Is there a parking lot that services this building? Parking lots needing assessment are indicated on the map on the last page.	☐ YES ☐ NO If answer is no, skip the next four questions outlined in red.
How many total parking spaces are in this lot?	
How many accessible parking spaces are in this lot?	
How wide are the parking spaces?	
Are the accessible spaces closest to the accessible entrance?	☐ YES ☐ NO Explain.
If there are stairs at the main entrance, is there also a ramp or lift at this same entrance?	☐ YES ☐ NO Explain.
Is the accessible entrance a service entrance? A service entrance is defined as an entrance not intended for use by the general public, but for deliveries and/or removal of waste.	☐ YES ☐ NO
Do inaccessible entrance(s) have signs indicating the location of the nearest accessible entrance?	☐ YES ☐ NO
How many signs are provided at each inaccessible entrance to indicate the location of the nearest accessible entrance?	Please indicate the number at each location, not the total number.
At each accessible entrance, does the entrance door have at least a 32 inch clear opening? A double door with a jamb in the middle is measured from one side to the jamb.	☐ YES ☐ NO Please measure each door width.

At each accessible entrance, is there at least 18 inches of clear, unobstructed wall space on the pull side of the door next to the handle?  	☐ YES ☐ NO Please measure each clear space.
Is the door handle operable with a closed fist?	☐ YES ☐ NO To answer this question, attempt to open the door with the one hand.

Part 2: Interior Public Access

The second section of the audit focuses on public spaces within the building including hallways, corridors, office spaces, classrooms, and so on. Restrooms will be discussed in the next section. Please reference the map on the last page to determine what to measure and/or record for each question in this section. Please check the appropriate box below and add any additional information requested. If additional space is needed to record data, use the back of this sheet.

QUESTIONS/DIAGRAMS	DATA COLLECTION
Are all public spaces (as included in the map) on an accessible route of travel? Accessible route is defined as a continuous, unobstructed path connecting all accessible spaces.	☐ YES ☐ NO Explain.
Is the accessible route to all public spaces at least 36 inches wide?	☐ YES ☐ NO Please measure each width.
Locate the main office as indicated on the map. Is the doorway into the space at least 32 inches?	☐ YES ☐ NO Please measure.

On the pull side of doors, next to the handle, is there at least 18 inches of clear wall space?	☐ YES ☐ NO Please measure each as indicated on map.
Are door handles between 34 and 48 inches high?	☐ YES ☐ NO Please answer for each door as measured.
Please reference the map for the next section of measuring. Highlighted spaces on the map should only be measured if you can do so without disturbing classes in progress. Please note which spaces on your map you were and were not able to measure, with reasons why you were unable. There are check boxes and a small writing space for each of the highlighted spaces located on your map.	
Are aisles and pathways in these spaces at least 36 inches wide?	☐ YES ☐ NO Please answer for each space. For example, Room 101 has 36" pathways and Room 103 has 30" pathways.
Is there a 60 inch diameter circle or T-shaped space for turning a wheelchair completely? 	☐ YES ☐ NO Please answer for each space.
Is there carpeting in these spaces? If yes, is the carpet low-pile, tightly woven, and securely attached along edges? Low-pile is defined as short loops in the carpet fabric, whereas a shag rug would be defined as high-pile due to the long loops making the carpet fabric looser.	☐ YES ☐ NO Please answer for each space.

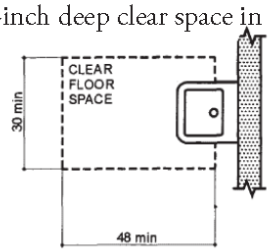
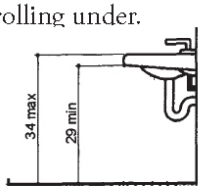
In the aisles and pathways as measured previously, are all obstacles cane-detectable? Cane detectable clearances are no more than 27 inches off the floor, or higher than 80 inches off the floor, protruding less than 4 inches from the wall?	☐ YES ☐ NO Please answer/measure for each obstacle.
Are signs in designated spaces at least 60 inches above the floor?	☐ YES ☐ NO Please measure each.
Are signs mounted on the wall adjacent to the latch side of the door?	☐ YES ☐ NO Please answer for each.
Are all light switches and outlets in the highlighted areas at an accessible height? The height range for an accessible control is between 9 and 54 inches.	☐ YES ☐ NO Please measure each.
Are lighting controls operable with a closed fist?	☐ YES ☐ NO
Are there spaces for wheelchair seating?	☐ YES ☐ NO
If the answer to the last question was yes, are these seats distributed throughout the space?	☐ YES ☐ NO
Are the tops of tables or counters between 28 and 34 inches high?	☐ YES ☐ NO Please measure each.

In the office/lobby area as indicated on the map, is there a portion of the main counter that is no more than 36 inches high?	☐ YES ☐ NO Please measure.
Do stair treads have a non-slip surface? Non-slip is defined as designed to reduce or prevent slipping.	☐ YES ☐ NO Explain.
Do stairs have continuous rails on both sides, with extensions beyond the top and bottom stairs?	☐ YES ☐ NO Please measure extensions.
If the building has elevators (indicated on your map), are there both visible and audible door opening/closing and floor indicators in the elevator(s)?	☐ YES ☐ NO Please describe each.
Are the call buttons for the elevator(s) no higher than 42 inches?	☐ YES ☐ NO Please measure each.
Is there at least one drinking fountain with clear floor space of at least 30 by 48 inches in front?	☐ YES ☐ NO Please measure each.
Is there at least one drinking fountain spout measuring no more than 36 inches from the ground and another measuring between 38 and 43 inches?	☐ YES ☐ NO Explain and measure each.
Are water fountain controls operable with a closed fist?	☐ YES ☐ NO Explain and answer for each.

Part 3: Restroom Access

The last section focuses on the restroom(s) within the building. Please reference the map on the last page to determine what to measure and/or record for each question in this section. Please check the appropriate box below and add any additional information requested. If additional space is needed to record data, use the back of this sheet. You will only be asked to collect data in the restroom of your identified gender, as noted on the map.

Is at least one restroom fully accessible? Fully accessible could describe a separate room designated as handicapped or an accessible stall in a larger restroom.	☐ YES ☐ NO Explain and answer for each.
Are there signs at inaccessible restrooms that give directions to accessible ones?	☐ YES ☐ NO Explain.
Are there signs on the latch side of the door to identify restrooms?	☐ YES ☐ NO If answering no, please note where the signs are located.
Is the doorway to access the restroom at least 32 inches clear?	☐ YES ☐ NO Please measure.
Is there a 36-inch wide path to all fixtures in the restroom?	☐ YES ☐ NO Please measure.
Are the stall doors operable with a closed fist, inside and out?	☐ YES ☐ NO Explain.
How many wheelchair accessible stalls are there in this restroom?	8

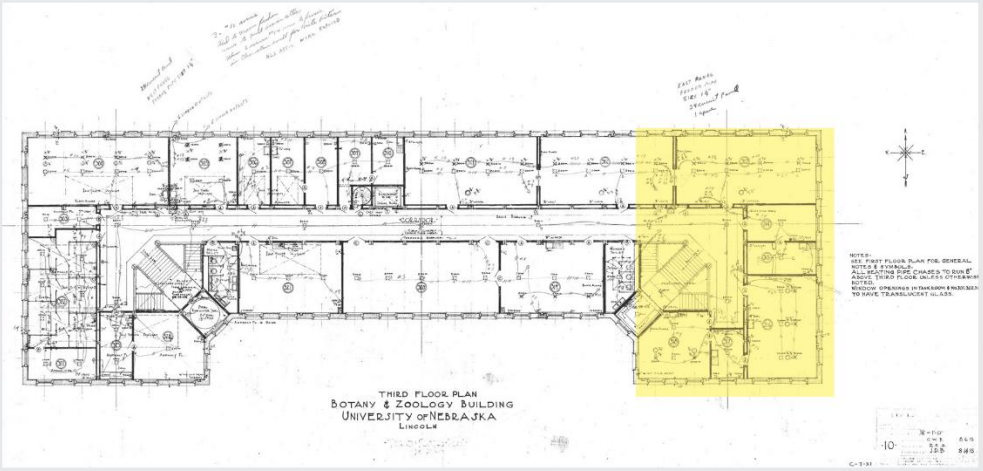
Is there a wheelchair accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing?	☐ YES ☐ NO Please measure each accessible stall.
In the accessible stall(s), are there grab bars behind the toilet and on the side wall?	☐ YES ☐ NO Explain.
Does the toilet seat measure between 17 and 19 inches from the ground?	☐ YES ☐ NO Please measure.
Does at least one lavatory (sink) have a 30-inch wide by 48-inch deep clear space in front of it? 	☐ YES ☐ NO Please measure.
Is the lavatory rim no higher than 34 inches?	☐ YES ☐ NO Please measure.
Is there at least 29 inches from the floor to the bottom of the lavatory apron? The lavatory apron is defined as the bottom of the sink basin that protrudes out and could interfere with a wheelchair rolling under. 	☐ YES ☐ NO Please measure.

This concludes the building audit. Please return all materials to Room 108 of Architecture Hall. The primary investigator will gather your materials in person and distribute compensation, and dependent upon your remaining data collection, either the next audit if completing it at the time or a survey if all data collection is complete. Participants may also choose to come back at another time if they are completing a second building audit as agreed upon in the informed consent.

END OF AUDIT

Map of (Insert building name)

As stated in audit, sections of each building will be highlighted on the map, as exemplified below, to show where measurements are to be taken and data collected. Check boxes are also included in case a space is not measurable at the time. Map will take up entirety of this grey box, or will be on a supplemental page if size requires.



Able to measure?
Room name/number: Yes ☐ No ☐ Notes:
Room name/number: Yes ☐ No ☐ Notes:
Room name/number: Yes ☐ No ☐ Notes:
etc....

N

Appendix K – Coding Document

This document serves as the coding instrument for tabulating the final results of the data collected through the participants' and primary investigator's audits. As each question can be answered in a slightly different manner, this code distinguishes which answer falls into the category of a minimum that is met or a minimum that is exceeded. A third column for incidental findings of non-compliance is also included. Questions highlighted in yellow are quantifiable. Other questions are asked in the interest of collecting data on the general accessibility of the buildings. These questions will be compared qualitatively. In the Microsoft Excel document, there will be a column for the minimums as well as a column for exceeding the minimums. Each building will have its own tab with data from the participant and the primary investigator. Totals will be calculated for each building to assess the hypothesis and a total for all buildings will be calculated for the same purpose. Participant findings will be compared to primary investigator's findings.

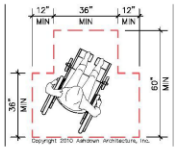
	Question on Audit	Quantifiable in data?	Minimum	Exceeds Minimum	Incidental
1	Is there a route of travel into the building that does not require the use of stairs?	This question is not quantifiable in the data collection.	N/A	N/A	Answering "No" to this question would cause the building to be in non-compliance.
2	How many entrance doors exist in this building from the ground level? A double door counts as one entrance.	This question is asked in order to gain baseline data for the following question and therefore is not quantifiable.	N/A	N/A	No incidental findings could occur from asking this question.
3	How many of these entrances (if any) do not require the use of stairs?	Yes	Answering "1" or fewer would count as minimum.	Answering "2" or any value larger would count as exceeding the minimum.	Answering "0" to this question would cause the building to be in non-compliance.
4	Of these entrances that do not require stairs (also called an accessible entrance), is the	Yes	Answering "36 inches" in the measurement portion would count as minimum.	Answering "37 inches" or a greater dimension in the measurement portion would count as	Providing an answer "35 inches" or less would cause the building to be in non-compliance.

	route of approach at least 36 inches wide?			exceeding minimum.	
5	Are there railings along any of the accessible entrances?	This question is asked in order to gain baseline data for the following question and therefore is not quantifiable.	N/A	N/A	Answering “No” would indicate non-compliance.
6	Do these railings measure between 34 and 38 inches high?	Yes.	34” would be considered the minimum.	Any measurement greater than 34” and less than 38” would be considered exceeding the minimum.	Any measurement less than 34” or greater than 38” would be non-compliant.
7	Is the width between the railings at least 36 inches?	Yes.	36” would be considered the minimum.	Any measurement greater than 36” would be considered exceeding the minimum.	Any measurement less than 36” would be non-compliant.
8	Is there a parking lot that services this building? Parking lots needing assessment are indicated on the map on the last page.	This question is asked in order to gain baseline data for the following questions and therefore is not quantifiable.	N/A	N/A	N/A
9	How many total parking spaces are in this lot?	This question is asked in order to gain baseline data for the following	N/A	N/A	N/A

		questions and therefore is not quantifiable.			
10	How many accessible parking spaces are in this lot?	Yes	The answer is a ratio based on ADA standards. This table is included at the end of this document.	The answer is a ratio based on ADA standards. This table is included at the end of this document.	If the answer is less than the number required by the ratio, the parking lot would be non-compliant.
11	How wide are the parking spaces?	Yes	A measurement of 8 feet would be considered a minimum.	A measurement exceeding 8 feet would be considered exceeding the minimum.	A measurement of less than 8 feet would be considered non-compliant.
12	Are the accessible spaces closest to the accessible entrance?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
13	If there are stairs at the main entrance, is there also a ramp or lift at the same entrance?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
14	Is the accessible entrance a service entrance? A service entrance is defined as an	This question does not measure anything quantifiable and is asked to	N/A	N/A	N/A

	entrance not intended for use by the general public, but for deliveries and/or removal of waste.	inquire about the general accessibility of the area.			
15	Do inaccessible entrance(s) have signs indicating the location of the nearest accessible entrance?	This question is asked in order to gain baseline data for the following question and therefore is not quantifiable.	N/A	N/A	If the answer is no, indicating no signs, this would indicate non-compliance.
16	How many signs are provided at each inaccessible entrance to indicate the location of the nearest accessible entrance?	Yes	1 sign would be considered the minimum	Any number larger than 1 would exceed the minimum.	0 signs would indicate non-compliance.
17	At each accessible entrance, does the entrance door have at least a 32-inch clear opening? A double door with a jamb in the middle is measured from one side to the jamb.	Yes	32” would be considered the minimum.	Any measurement exceeding 32” would be considered to exceed the minimum.	Any measurement less than 32” would be non-compliant.
18	At each accessible entrance, is there at least 18 inches of clear,	Yes	18” would be considered the minimum.	Any measurement greater than 18” would be considered to	Any measurement less than 18” would be non-compliant.

	unobstructed wall space on the pull side of the door next to the handle?			exceed the minimum.	
19	Is the door handle operable with a closed fist?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
20	Are all public spaces (as included in the map) on an accessible route of travel? Accessible route is defined as a continuous, unobstructed path connecting all accessible spaces.	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	Answering “No” would indicate non-compliance.
21	Is the accessible route to all public spaces at least 36 inches wide?	Yes	36” would be the minimum.	Anything greater than 36” would exceed the minimum.	Anything less than 36” would be non-compliant.
22	Locate the main office as indicated on the map. Is the doorway into the space at least 32 inches wide?	Yes	32” would be the minimum.	Anything greater than 32” would exceed the minimum.	Anything less than 32” would be non-compliant.
23	On the pull side of the doors,	Yes	18” would be considered the	Any measurement	Any measurement

	next to the handle, is there at least 18 inches of clear wall space?		minimum.	greater than 18” would be considered to exceed the minimum.	less than 18” would be non-compliant.
24	Are door handles between 34 and 48 inches high?	Yes	34” would be considered the minimum.	Any measurement greater than 34” would exceed the minimum.	Any measurement less than 34” or greater than 48” would be non-compliant.
25	Are aisles and pathways in these spaces at least 36 inches wide?	Yes	36” would be the minimum.	Anything greater than 36” would exceed the minimum.	Anything less than 36” would be non-compliant.
26	Is there a 60 inch diameter circle or T-shaped space for turning a wheelchair completely?	Yes	Either a 60” diameter circle or a T shape measuring as such would be a minimum. 	Space exceeding the 60” circle or T shape would exceed minimums.	Answering “No” would indicate non-compliance.
27	Is there carpeting in these spaces? If yes, carpet low-pile, tightly woven, and securely attached along edges? Low-pile is defined as short loops in the carpet fabric, whereas a shag rug would be defined as high-pile due to	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A

	the long loops making the carpet fabric looser.				
28	In the aisles and pathways as measured previously, are all obstacles cane-detectable ? Cane detectable clearances are no more than 27 inches to the floor, or higher than 80 inches to the floor, protruding less than 4 inches from the wall?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	Measurements between 27 and 80 inches off the floor and protruding more than 4 inches would be non-compliant.
29	Are signs in designated spaces at least 60 inches above the floor?	Yes	A height of 60" would be a minimum.	A height above 60" would exceed minimum.	A height of less than 60" would be non-compliant.
30	Are signs mounted on the wall adjacent to the latch side of the door?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	Signs located in other locations would be considered non-compliant.
31	Are all light switches and outlets in the highlighted areas at an	Yes	9 inches would be considered a minimum for outlets, where light switch	More than 9 inches would be considered exceeding minimum and	Less than 9 inches and greater than 54 inches would be non-compliant.

	accessible height? The height range for an accessible control is between 9 and 54 inches.		minimum is 48 inches.	more than 48 inches would exceed the minimum.	
32	Are lighting controls operable with a closed fist?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
33	Are there spaces for wheelchair seating?	This question is asked in order to gain baseline data for the following question and therefore is not quantifiable.	N/A	N/A	Answering “No” would indicate non-compliance.
34	If the answer to the last question was yes, are these seats distributed throughout the space?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
35	Are the tops of tables or counters between 28 and 34 inches high?	Yes	28” would be considered a minimum.	More than 28” would exceed minimum.	Less than 28” and more than 34” would be non-compliant.
36	In the office/lobby area	Yes	28” is the minimum.	Anything between 29” and	Counters greater than 36” would

	as indicated on the map, is there a portion of the main counter that is no more than 36 inches high?			36” exceeds the minimum.	be considered non-compliant.
37	Do stair treads have a non-slip surface? Non-slip is defined as designed to reduce or prevent slipping.	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
38	Do stairs have continuous rails on both sides, with extensions beyond the top and bottom stairs?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
39	If the building has elevators (indicated on your map), are there both visible and audible door opening/closing and floor indicators in the elevator(s)?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
40	Are the call buttons for the elevator(s) no	Yes	42” is the required height and is therefore	Any exceeding value in this case would	Any exceeding value in this case would

	higher than 42 inches?		a minimum.	result in non-compliance.	result in non-compliance.
41	Is there at least one drinking fountain with clear floor space of at least 30 by 48 inches in front?	Yes	Minimum clear space would be 30" by 48"	Exceeding those dimensions in both directions would be considered exceeding the minimum.	A clear space of less than 30" by 48" would be non-compliant.
42	Is there at least one drinking fountain spout measuring no more than 36 inches from the ground and another measuring between 38 and 43 inches?	Yes	Minimum would be 38" for the taller fountain.	Exceeding minimum would be more than 38" for the taller fountain.	Not having a fountain 36" or less or having a fountain taller than 43" would be non-compliant.
43	Are water fountain controls operable with a closed fist?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
44	Is at least one restroom fully accessible? Fully accessible could describe a separate room designated as handicapped or an accessible	Yes	Having one accessible restroom/1 accessible stall is a minimum.	Having more than 1 accessible stall/restroom exceeds minimum.	Answering "no" to this question indicates there are not any accessible bathrooms in the space, making it non-compliant.

	stall in a larger restroom.				
45	Are there signs at inaccessible restrooms that give directions to accessible ones?	Yes	1 sign is a minimum.	More than one sign exceeds minimum.	No signs would be considered non-compliant.
46	Are there signs on the latch side of the door to identify restrooms?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
47	Is the doorway to access the restroom at least 32 inches clear?	Yes	32" would be considered the minimum.	More than 32" would exceed minimum.	Less than 32" would be non-compliant.
48	Is there a 36-inch wide path to all fixtures in the restroom?	Yes	36" would be considered the minimum.	More than 36" would exceed minimum.	Less than 36" would be non-compliant.
49	Are the stall doors operable with a closed fist, inside and out?	This question does not measure anything quantifiable and is asked to inquire about the general accessibility of the area.	N/A	N/A	N/A
50	How many wheelchair accessible stalls are there	Yes	1 is considered minimum.	More than 1 exceeds minimum.	Less than one is non-compliant, unless there is another

	in this restroom?				restroom located elsewhere in the building that is in compliance.
51	Is there a wheelchair accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing?	Yes	Minimum measurements for an accessible stall are 60” by 60”, with reasonable minimums also including measurements of 48” by 60”. Smaller stalls are considered inaccessible for the purpose of this audit.	Measurements exceed minimum in this case if one dimension exceeds 60” and the other is 49” or more. A 60”x60” stall would be a minimum, and a 48”x60” stall would be a minimum.	Stalls with smaller measurements than 60”x60” could be compliant based on feasibility of plumbing renovations in building updates over the years.
52	In the accessible stall(s), are there grab bars behind the toilet and on the side wall?	Yes	Behind the toilet, minimum grab bar length is 36” and on the side of the toilet minimum grab bar length is 40”.	Minimums are exceeded if both grab bars are longer than the minimum length.	Non-compliance would be not having grab bars or grab bars less than 36” and less than 40” respectively.
53	Does the toilet seat measure between 17 and 19 inches from the ground?	Yes	17” is considered minimum	More than 17” is considered to exceed minimum.	Less than 17” and more than 19” would be non-compliant.
54	Does at least one lavatory (sink) have a 30-inch wide by 48-inch deep clear space in front of it?	Yes	Minimum measurements are 30” by 48”.	Both dimensions of 30” and 48” must exceed to be considered exceeding minimum.	Dimensions measuring less than 30”x48” would be non-compliant.
55	Is the lavatory rim no higher	Yes	34 inches is the standard height	Any exceeding value in this	Any exceeding value in this

	than 34 inches?		and is therefore a minimum.	case would result in non-compliance.	case would result in non-compliance.
56	Is there at least 29 inches from the floor to the bottom of the lavatory apron? The lavatory apron is defined as the bottom of the sink basin that protrudes out and could interfere with a wheelchair rolling under.	Yes	29" is considered the minimum.	More than 29" would exceed the minimum.	Less than 29" would be non-compliant.

Total Number of Parking Spaces Provided in Parking Facility (per facility)	(Column A) Minimum Number of Accessible Parking Spaces (car and van)	Mininum Number of Van-Accessible Parking Spaces (1 of six accessible spaces)
1 to 25	1	1
26 to 50	2	1
51 to 75	3	1
76 to 100	4	1
101 to 150	5	1
151 to 200	6	1
201 to 300	7	2
301 to 400	8	2
401 to 500	9	2
500 to 1000	2% of total parking provided in each lot or structure	1/6 of Column A*
1001 and over	20 plus 1 for each 100 over 1000	1/6 of Column A*
*one out of every 6 accessible spaces		

Diagram courtesy of ADA.gov

Appendix L – Survey

Participant Survey

The responses to this survey will remain anonymous. You will not be asked to provide any identifying information, not even your participant ID code. When you are finished with the survey, please place it in the envelope marked "Participant Surveys." The Primary Investigator will not review the surveys until all are completed, assuring anonymity.

Please fill out the following survey to the best of your ability. For each of the statements, circle the answer that best describes your opinion. For each of the questions, circle answer that best describes your opinion or fill in the blank with your own reasoning. Additional comments/concerns can be left on the back side of each sheet.

1. Prior to participation in this study, I had knowledge of the term 'accessibility' as applied to the built environment.

Strongly Agree Agree Neutral Disagree Strongly Disagree

2. After consenting to participate in this study, I researched terms or content relating to accessibility as applied to the built environment.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3. After completing your participation in this study, I intend to further research terms or content relating to accessibility as applied to the built environment.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. In my opinion, buildings on campus are accessible.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Explain._____
_____
_____

(continued on next page)

5. In your opinion, what accessible accommodations are common on this campus? You may check more than one option.

☐ Wheelchair ramps

☐ Ground level entrances not requiring ramps or stairs

☐ Elevators

☐ Accessible entry at the main entrance

☐ Wheelchair seating in classrooms

☐ Accessible bathrooms

☐

Other._____

_____

_____

6. Prior to participation in the study, did you have any knowledge of the Americans with Disabilities Act Design Standards?

Great Some Neutral Little None

7. Participation in this study increased my awareness for accessibility considerations on campus.

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. Based on my experience completing the building audit(s), I believe the building(s) I audited provide sufficient accessible accomodations to all students.

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. I am familiar with the Services for Students with Disabilities Office (SSD).

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. I am familiar with the SSD Americans with Disabilities Act (ADA) Grievance Procedure.

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. I would like know more information about the services offered through SSD.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. I believe students all have a right to equally access buildings on campus.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I believe the University should make reasonable accommodations for students with disabilities.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. I believe the University does make reasonable accommodations for students with disabilities.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. I believe the building audit(s) assessed accessibility well.

Strongly Agree Agree Neutral Disagree Strongly Disagree

16. The questions asked on the audit were clear and easy to understand.

Strongly Agree Agree Neutral Disagree Strongly Disagree

17. The training in site measuring was beneficial in completing the audit(s).

Strongly Agree Agree Neutral Disagree Strongly Disagree

18. The time spent in training and completing the audit(s) was reasonable.

Strongly Agree Agree Neutral Disagree Strongly Disagree

19. I spent more time than was expected completing the audit(s).

Strongly Agree Agree Neutral Disagree Strongly Disagree

20. I would participate in a similar research study in the future.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Thank you for taking the time to participate in this study. Following completion of this survey, you will have received all compensation and will receive a debriefing follow-up email to discuss results of the study.